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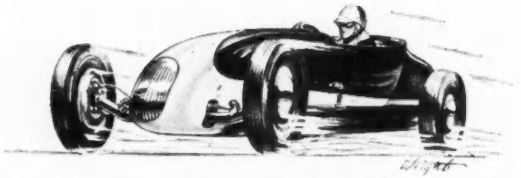

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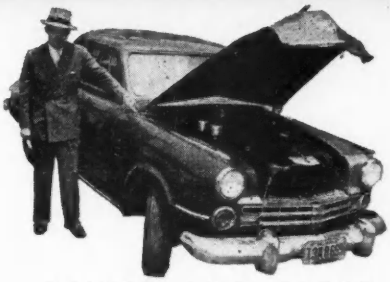

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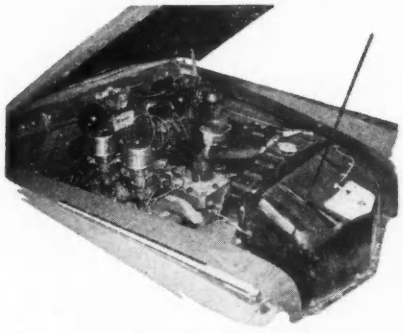

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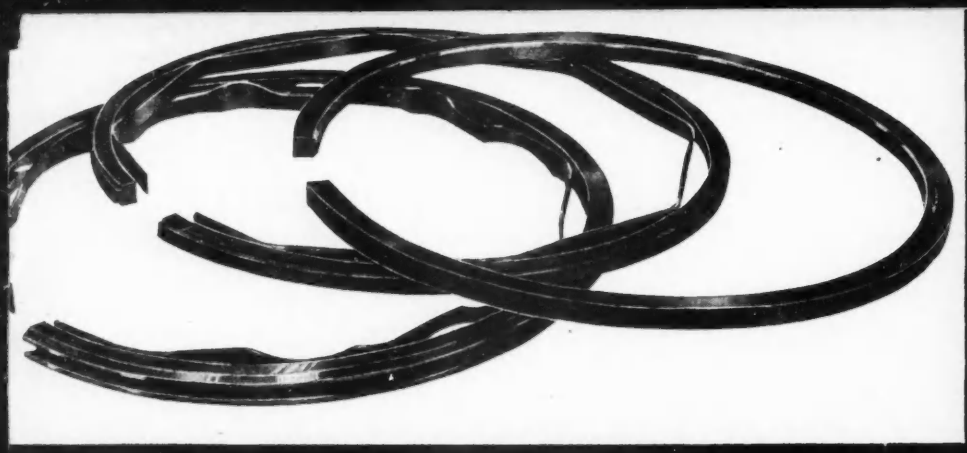

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COVER: Miss Ethel Williams, a Rita LaRoy model, prepares to get into the Norman E. Timbs custom creation. (See page 20.) Photo by THOMAS J. MEDLEY.

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road racing

With the east coast witnessing a revival of road racing (three this year) we are beginning to wonder why other sections of the country, and particularly the west coast, aren't enjoying a similar revival. The west coast, where so much racing interest is centered, hasn't seen a true road race since the "grand old days" of Santa Monica and Corona.

Granted, most state laws prohibit road racing on public highways, but in the vast territory that the western states cover, surely there must be sufficient private property suitable for a road race.

And it doesn't have to be anything elaborate—a paved course that includes a straight run, a grade, and several sharp corners would be very satisfactory. Maybe an old abandoned air strip or former Army post would fill the bill.

It seems almost unbelievable that with all the interest that is centered on foreign car events, that no road races have yet been held. And instead of just standing by and waiting for a course to materialize out of the blue, wouldn't it be better if the foreign car enthusiasts—including friends and spectators — conducted an all-out campaign for a strip?

It appears that the California Sports Car Club is taking a step in the right direction in their use of part of the Goleta airport in Santa Barbara. With the proper amount of support and the elimination of a few remaining stumbling blocks, a course can be built there on which 100-mile road races can be held.

A good road race is certainly every bit as interesting as a track race, and being non-professional, serves as a safety valve for car enthusiasts. And what would be better than taking speed off highways and placing it on a safe, policed course?

road testing the M.G.

by WALTER A. WORON, *Editor*

The car for this road test was furnished to MOTOR TREND by International Motors, Inc., foreign car dealer at 5670 Sunset Blvd., Los Angeles, California.

TO MOST PERSONS, the MG Midget has always been a question mark. As they see it drive down the street or streak along the highway, a look of wonderment comes over their faces. Does it really perform? Or does it just look like it?

Determined to settle this matter, at least to our satisfaction, two members of our staff journeyed to a local foreign car dealer, International Motors, Inc. There we arranged for a road test of the latest series MG, the "TC."

The MG was originally developed by several mechanics working in the Morris Garages, who assembled one car from parts of other Nuffield cars (Morris and Riley). The car performed so well that it was put into full-scale production. Since its introduction in 1929 by the MG Car Company (a division of the Nuffield Group), the car has become very popular, here as well as in England.

The MG Midget is powered by a four-cylinder, overhead valve, 1250 cc (76.25 cubic inch) engine with twin carburetion. It develops 54.4 bhp at 5200 rpm, which, with the weight of 1736 pounds (unloaded) gives the car a horsepower/chassis weight ratio of 31.85:1.

Instead of taking out one car, we had the advantage of using two MG's—one unsupercharged and the other equipped with a Shorrock supercharger. In this manner, we were able to switch off and check the performance characteristics of each car.

Slipping behind the wheel (on the right side of the car) of this two-seater, even though the space was comparatively small, was an easy matter. The spring-spoked steering wheel and column are adjustable for length and angle, while a release lever below the seat allows the seat to slide back and forth on tracks.

A turn of the ignition key, a pull on the starter button (located on the dash) and the engine started. As you step on the throttle you check your rpm on the tachometer, located on the dash immediately in front of you. (The speedometer is on the extreme left side of the dashboard.) Idling at 1000 rpm for a few minutes and checking your oil pressure to see that it is above 40 psi, you place the car in gear and drive off.

The gearshift is a short-handled control, with the gear positions being outlined on the top of the knob. The shift is conventional except for first gear being where reverse normally is, and reverse being to the extreme right and below neutral. Second, third and fourth gear are in the positions of first, second and third.

Until you get used to it, the clutch and brake pedals seem to be very close together, but with a little driving, this fact is soon forgotten.

Driving through traffic was an easy matter, for the MG was able to dart in and out of holes too small for the conventional-size automobile. Sitting on the right made it surprisingly simple to judge distances.

As you drive along, the instruments that you watch the most are the tachometer and the oil pressure. For normal shifts, you get the tach at least above 2000 rpm, but for acceleration, you shift at about 5000 rpm.

After a tour through traffic, we entered steep, twisting mountainous roads. In the blown car, we climbed at 55 mph with no difficulty in fourth gear. On the same grade in the unblown MG, it was necessary to shift into third and sometimes into second.

The steering, although hard as compared to normal American stock cars, is high-geared and therefore is extremely fast, which makes it very satisfactory for quick control. It requires only one and a half turns from lock to lock. Because of the suspension and frame design, the car has good stability at high speeds and for fast cornering. The frame is of box section type, and is suspended with longitudinal semi-elliptic leaf springs, both front and rear. Large double-acting hydraulic piston-type shock absorbers are used for damping.

Coming down out of the mountainous roads, it was sometimes necessary to shift down in gears, which was easy with the synchromesh gearbox. When necessary to use the brakes, positive braking action was assured, for the hydraulic brakes have a lining area of 104 square inches. The foot pedal operates all four wheels, while the hand brake, with a racing type quick-release lever, operates the two rear brakes only.

After more driving, we arrived at a lonely road where we were able to make acceleration tests without any fear of accidents. Before the actual clocked tests, we had a drag race between the supercharged MG and the unblown MG. Up until this time it did not appear that the blown MG traveled much faster than the unblown model. This test, however, showed otherwise (see accompanying photo).

For the acceleration tests, one member of the staff sat in the passenger's seat while the foreign car representative (who was more familiar with the car) drove the MG. With clock watch in hand and averaging two runs in each direction, we observed the following:

TEST	UNBLOWN MG	BLOWN MG
0-30 through gears	6.2 secs	4.9 secs
0-60 through gears	20.3 secs	14.2 secs
10-40 in third gear	9.2 secs	8.15 secs
20-60 in high gear	27.6 secs	17.25 secs

As can be observed from the above figures, the blown MG easily outperformed the unblown car. The acceleration figures of the unblown model are not outstanding insofar as compared to American stock cars, but the second and third gears are fairly high, being 1.95:1 and 1.35:1, respectively. Low gear is 3.38:1. The blown MG accelerates quite satisfactorily.

Unfortunately, we were unable to make top speed or fuel consumption tests, but from the figures published by the

DRAG RACE—In a ¼-mile acceleration race between the blown MG and the unblown model, the former came off the easy victor.

HILL CLIMB—The climbing and cornering characteristics of the MG showed up to good advantage on this winding road.

factory, it is understood that the MG will do 80-85 mph and will give 34 mpg at a steady 50 mph. With the blower installed, the MG will do approximately 15 mph faster in top gear.

After the acceleration tests, we went home by a slightly different route. Upon arrival at the garage, although we were quite pleased with the car's performance, it was such that we were thoroughly intrigued with the MG's possibilities. So, a few days later, we took off with another car (belonging to E. Alan Moss) to a more rugged area.

This site was covered with deep-rutted dirt roads taking off in all directions, with trails going up the sides of adjacent hillsides. These trails are those used from time to time by motorcycle hill climb enthusiasts.

One of the first tests we performed was that of trying the climb characteristics up a motorcycle trail. Although we were unable to reach the top, the speed with which we climbed the hill does credit to this small car.

The car was driven over rough bumps, but because of its necessarily low ground clearance (6 inches) the bottom will scrape on bad ruts. We did some fast cornering and power-on slides and found that the car always maintained its equilibrium and always felt like it had plenty of reserve power.

When we were finished with the road test, we were thoroughly impressed with the MG Midget. Although it is not a family car, due to the fact that it only seats two people, and has a minimum of luggage space, we felt that such fine performance from such a small car does it credit—the MG Midget is truly a sports car.

DETAIL SPECIFICATIONS

Engine

No. of cylinders	4
Bore	66.5 mm (2.59 inches)
Stroke	90 mm (3.51 inches)
Capacity	1250 cc (76.25 cubic inches)
Maximum bhp	54.4 at 5200 rpm
Compression ratio	7.25:1

Transmission

Single dry plate heavy-duty clutch

Final gear ratios	First and reverse—17.32:1
	Second—10.0:1
	Third—6.93:1
	Fourth—5.125:1

Rear axle—Three quarter floating with spiral bevel final drive. Ratio, 5.125:1

Fuel

Carburetors	Twin S.U. semi-downdraft
Tank capacity	61.4 litres (13½ gallons)
Consumption average	25-32 mpg

Chassis

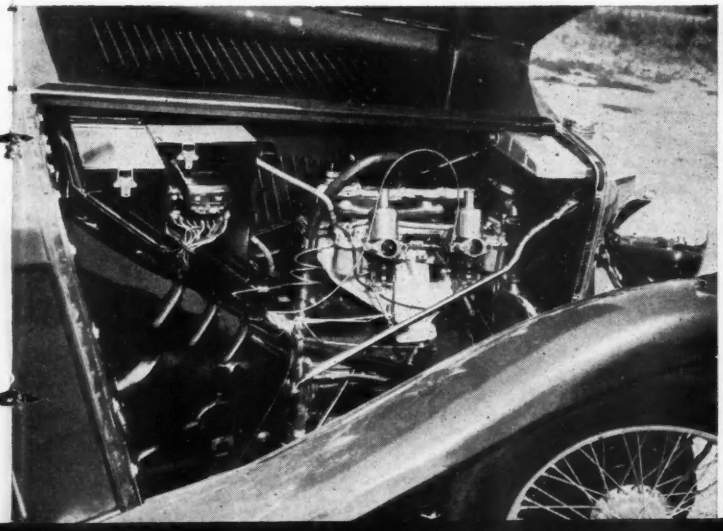
Box-section side members with tubular cross-members.
Underslung below the rear axle and upswept over the front axle.

Wheels

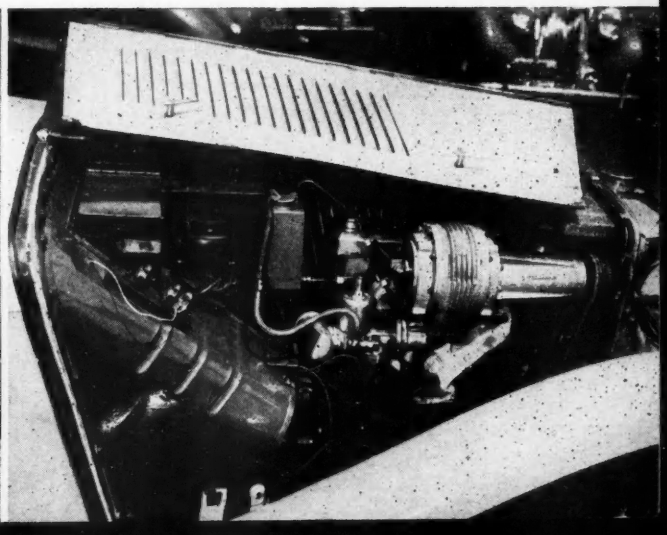
Wire-spoked, center-lock, knock-off hub caps
Tires—19 x 4.50

Dimensions

Tread	45 inches
Wheelbase	94 inches
Turning radius	37 feet
Overall width	56 inches
Overall height	53 inches
Overall length	139½ inches



UNBLOWN—The compact engine of the unblown MG is shown here. Note the dual downdraft carburetors, and the toolboxes mounted on the firewall. Engine is a four-cylinder in-line.



BLOWN—A Shorrock supercharger is shown installed on the engine of this MG. The use of a blower increases the top speed by about 15 mph and greatly increases acceleration.

R. E. PETERSEN

PHILADELPHIA AUTO SHOW

by **HANK OGDEN**

FOR THOSE whose interest centers on foreign and custom cars, the Philadelphia Auto Show—the first large post-war showing of practically all current 1949 American cars—was somewhat of a disappointment. Not a single new foreign-built car was exhibited, nor were there any of the fabulous custom-built jobs that incorporated bars, mink floor rugs, jeweled vanities and the like, and which have long adorned auto shows.

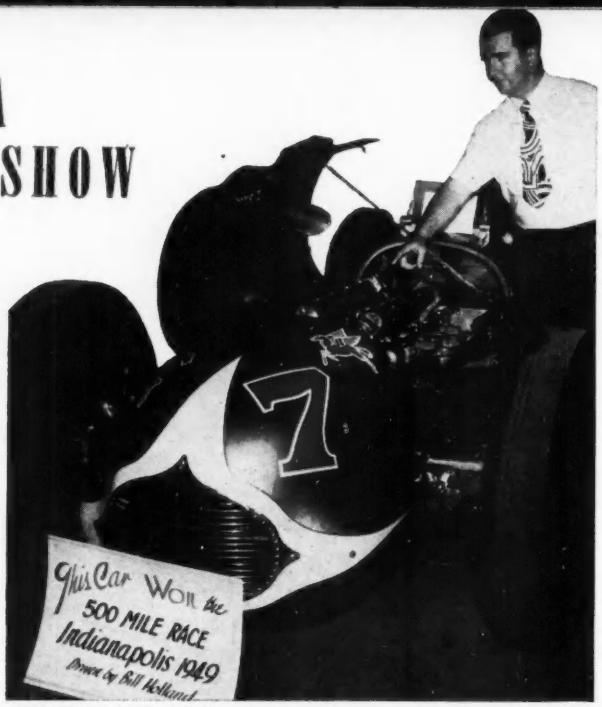
In general, there was little to be seen inside the Commercial Museum in regard to 1949 models that could not be seen on the street. The only new car on display which offered any semblance of novelty was the Kaiser, whose Traveler and Virginian have not as yet been seen in great quantities on the highways. The Traveler, to outward appearance, is a four-door sedan but has a rear-loading door formed by the split-hinged section normally housing the trunk compartment. The lower section folds down, offering a tailgate. The upper half can be swung upward to provide free access to the rear from floor to roof. The rear seat cushions fold so that 13 cubic feet of storage space is available.

The Kaiser-Virginian is a sports car with the outward appearance of a convertible with a fixed, all-steel top.

For most people, who took a lukewarm attitude toward the routine stock models on display, the collection of cars assembled by the Antique Automobile Club of America more than made up for the initial letdown. Ralph Mulford, six-time competitor at Indianapolis, Joe Zagersberger, famed nearly forty years ago as the "Flying Dutchman," Bill Holland, 1949 "500" winner, and George Green, who in 1938 and again in 1946, made transcontinental trips in his 1904 Oldsmobile, were among the interesting personalities on hand.

The cars represented ranged from a three-wheeler de Dion-Bouton of 1888 vintage to the 1932 dual-valve Stutz. The 1909 Mercedes, in which Ralph Mulford proved he still retained his driving skill by winning a 40-car eight-mile road

(*Continued on page twenty-three*)

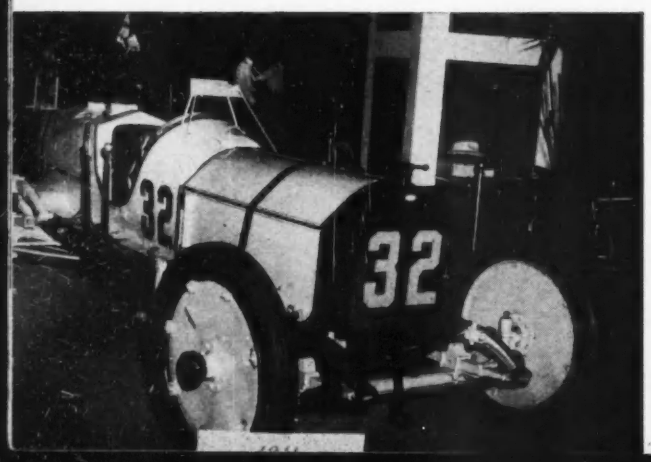


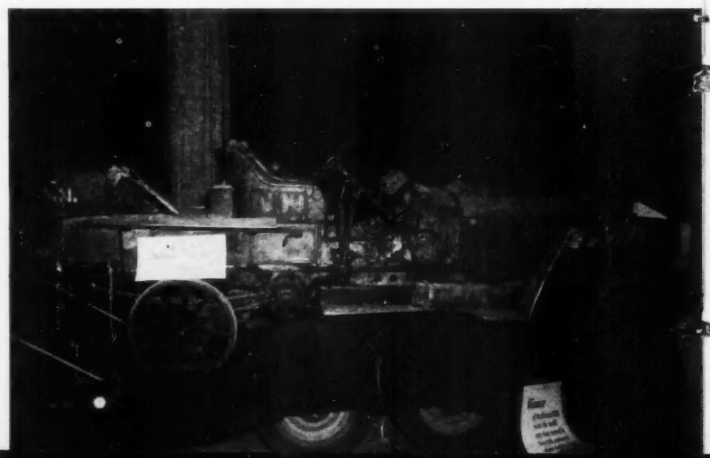
BILL HOLLAND—"500" winner, pointing to the magneto of his engine, explains what happened to his teammate Mauri Rose.

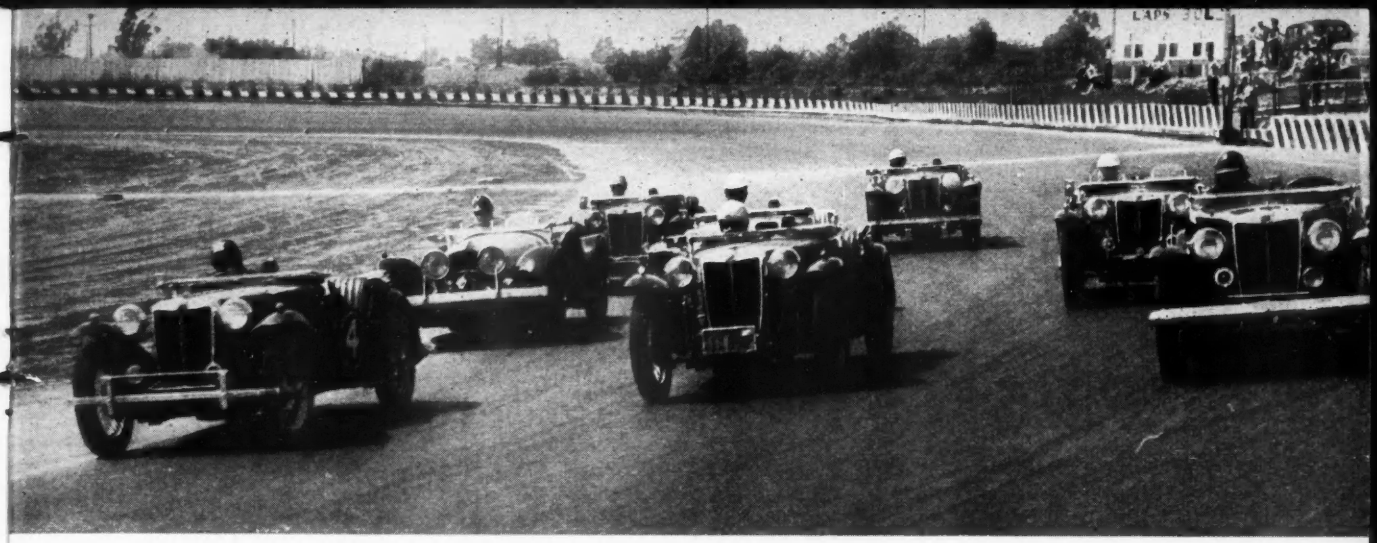
1896 DURYEA—Philadelphia Auto Show manager, M. J. Duryea, seated in one of the original thirteen production Duryea cars.

1908 THOMAS FLYER—The car that took first place in the fabulous nearly-round-the-world race. HANK OGDEN

1911 MARMON—Ray Harroun drove this Marmon to victory at the first Indianapolis "500." Note rear view mirror above cowl.







Foreign Car Race

by **A. J. B. CRUNDALL**

FOR THE FIRST time on record in the history of California Open Track Racing, an all-foreign car event, sponsored by the Foreign Car Racing Association, was held at Carrell Speedway in Gardena, on July 24th. The 8000 fans present were also treated to another first in the form of a woman driver from England competing in a special match race against the second fastest male driver of the evening.

The events were run from a standing start and clockwise around the track (left to right). The competing cars were divided into three classes: "A," for large sports cars, "B," for small sports cars, and "C," for economy sedans. The small sports car made up the largest group and consisted of MG-TC's, including two supercharged models and one six-cylinder 1936 MG Magnette, unblown. The "A" Class included a two-litre (122.05 cu. in.) BMW, a Talbot Lago, a Hotchkiss, and a Jaguar SS-100. Class "C" consisted of Morris Minors, Simcas, Renault's Fiats, and an Austin.

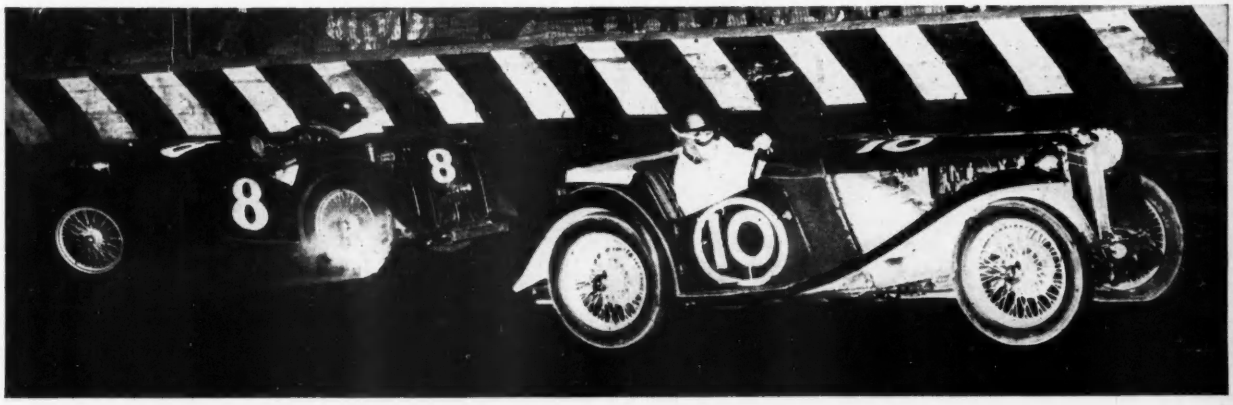
Since there was no handicapping in the sprint races, it probably would have been fairer to put the two supercharged MG's in class "A" for larger sports cars. Better still, providing there had been a sufficient entry list, the classes could have been broken down by cubic inch capacity, such as follows: Class I—unblown to 1500 cc (91 cu. in.); Class II—blown to 1250 cc (76.25 cu. in.), unblown to two litres (122 cu. in.); class III, blown to two litres, un-

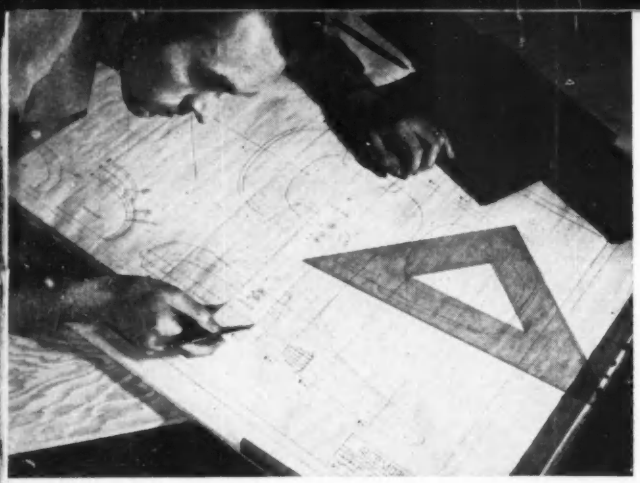
(Continued on page twenty-seven)

DAVE SMITH

ENGLISH SPEED QUEEN—Fay Taylour adjusts her helmet prior to a trial spin around the track in an MG-TC. Miss Taylour holds many records on midget and motorcycle tracks in England, Ireland, New Zealand, Australia, South Africa, Italy and India.

WHICH WAY?—Kenneth Weems, in No. 10, fights for control of his car, while Vincent Smith spins to avoid possible crack-up.





by GEORGE JERGENSON

NOTE: Mr. Jergenson, who now heads Art Center School's transportation department, was, for 11 years, the chief designer for General Motors Cadillac Division. He is using the knowledge gained there to considerable advantage through instructing some of our future designers. A resident of Santa Barbara, he is considered an authority on automotive and other transportation design.—Editor.

THE KEYNOTE to automobile design is realism. Without this, designs may be made that are neither practical nor advisable. That is why Art Center students are taught the General Motor's method—that of designing, then actually building the individual design.

About one quarter of Art Center School's total student body of 1,000 young people specialize in the study of industrial design during their third and fourth years. They have by this time received training which is basic for the practice of any of the visual arts in drawing, painting, modeling, anatomy, perspective, in free designing in two and three dimensions, in color science and in solving spatial problems. They have already learned to work within the limitations of materials and techniques and, at the same time, to improvise new designs and uses for them.

But when they enter the courses which are planned to fit them for the practice of industrial design, the profession in which they hope to serve as useful members of society, their training becomes eminently practical.

The instructors, who divide their time between teaching and successfully practicing industrial design, believe, along with the school's founder-director, Edward A. Adams, that graduates of an art school who cannot make a living with what they have learned have not been given the right instruction. They believe that before young designers can hope to influence the design of goods industry produces, they must know how they are designed and with what limitations and objectives industry produces them.

The young industrial design student at Art Center School learns to work realistically as he will have to do when designing for industry. If he designs a car, he follows the steps demanded by the automotive industry. These are as much elements of industrial design as are the purely artistic ones.

In automobile designing, the students follow all the steps in design problems from blueprints, sketches, templates to the final scale clay model. They do not, however, do metal or woodworking themselves. As in industry, this work is done by an expert craftsman. The student's mind is kept free for further designing.

Art Center School teaches the same methods in car styling instruction that are followed by General Motors and other automotive manufacturers. Thus Art Center school graduates are able to step directly into the styling sections of the

ABOVE—First step in designing automobile, as taught at Art Center School, is that of making seat dimensions. Second step is the design itself, which is subject to mechanical limitations.

Styling IS AN ART

industry with a full knowledge of procedure. This saves the student time and saves the industry both time and money. Important executives of General Motors make frequent visits to the Industrial Design department, offering criticism, advice and acquainting the students and faculty with the latest trends in the field.

The first step in the design of an automobile, as taught at the school, is a thorough study by the student of blueprints of existing models. This includes research on the mechanical limitations against which they are designing: wheelbase, tread, seat dimensions and locations, head room limitations, location of engine and drive units, cost, availability of materials and tooling problems of the manufacturer. The student then reduces an actual manufacturer's drawing of an existing model to 1/8, 1/4 or 3/8 scale, whichever is decided upon. He then makes a set of dimensions from the reduced drawing.

The next step is the sketching of the design that he wishes to carry out. When he has decided upon the final design sketch, the student then makes a three-view color rendering to proper scale. Criticism by the instructor is given on each step. This helps iron out many problems.

Using the three-view drawing on vellum, the surfaces are next developed and sections are made for wood templates. The clay model is then built to prove the student's design in three dimensions which is final proof his design is okay.

Changes, if any, are made at this point. If changes are necessary, new templates are made from the clay model and the drawing is revised to fit these changes.

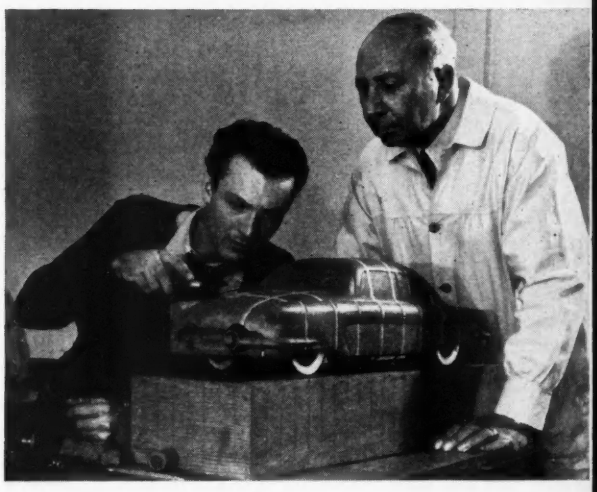
Final step is a plaster, wood, or a combination mockup. Proper finishes for all parts are used so that the mockup looks exactly like the finished car would when manufactured.

A great deal of research and study is done by the students in the car styling classes. Field trips are made to study latest developments in new automobile models, manufacturing methods, tooling, and customizing.

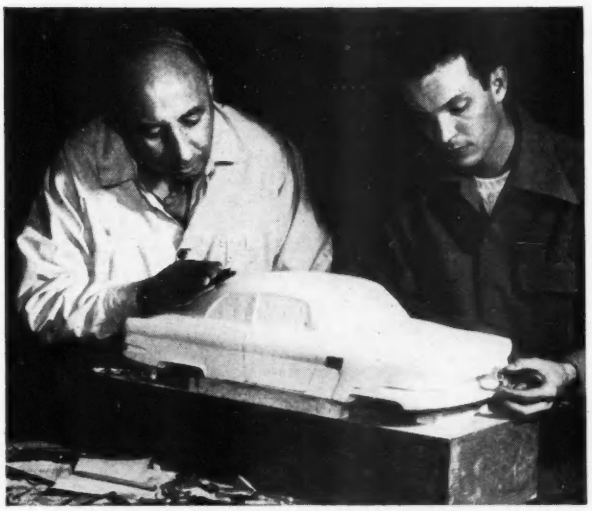
This type of practical training in automotive styling is that which is necessary to prepare students for the designing field. And without the constant influx of fresh, young ideas to prove that styling is an art, automotive designs would become stereotyped.

BELOW—Author George Jergenson (center, in coat) explains method of framing up an armature for clay modeling step.

BELOW—The critical stage—clay modeling the automobile. Strips have been applied at various stages for the templates.



BELOW—Instructor Joe Thompson and student carefully inspect the final model after it has been pulled from the mold.



BELOW—Student and author, instructor inspect finished product. Note fittings, etc. look like they would on finished car.

1950 Studebaker Starlight five-passenger Commander Coupe shows radical frontal treatment.

FRONT view of the "next look."

The car for this road test was furnished to MOTOR TREND *by Paul G. Hoffman, Inc., Studebaker dealer at 903 West Seventh Street in Los Angeles, California.*

TESTING THE "next look"

ADVERTISING THEIR products as the "next look in cars," the Studebaker Corporation has taken a bold step in producing a car that is strikingly different in apearance. Chief proponents of post war features such as the forward-placed powerplant, full front fenders, rear seat off the axle, and augmented glass area, the Studebaker designers, Raymond Loewy Associates, have again broken away from convention in this latest design.

Instead of following the trend of most postwar cars, with the square frontal areas and lowered grilles, Studebaker presents an airplane-type apearance, with its hood and fenders "cut away" so that the car appears to be leaning forward or to be moving even though standing still. (This design is somewhat reminiscent of the 1938 Grahams, which had a similar treatment of the frontal area.)

New Features

Chief new features of the Studebaker line (aside from the nose) are the front suspension, higher compression head, added length, redesigned instrument panel, and slightly-changed rear fenders.

The chrome "spinner" in the nose, besides providing an ornamental touch, augments four frontal openings which direct air to the engine for maximum cooling. The largest of these air passages consists of two oval-shaped honeycomb grille scoops located below the two smaller air channels, which flank the "spinner." Chrome moldings are used above these small twin channels. The heavy, wrap-around bumpers are held by supports enclosed within tubular housings painted to match the trim of the automobile.

In place of their traditional semi-elliptic, independent front wheel suspension, Studebaker has changed over to independent suspension with coil springs. The top of each coil spring is recessed in the front cross-member, while the bottom of the spring is seated on the lower control arm. Rubber insulation is used at the top and bottom of each coil spring. The upper and lower control arms are pivoted so that they rake to the rear about 15 degrees. A rubber-mounted front stabilizer bar is used at each wheel, between the frame and the front of the lower control arm. Using an arrangement similar to other postwar cars, Studebaker now mounts the tubular shock inside the coil spring.

Engines in both the Champion and Commander have a higher compression ratio (7:1, or 7.5:1 for high altitudes.) In this manner, horsepower has been increased to 85 at 4000 rpm in the Champion, and 102 at 3200 rpm in the Commander. Bore and stroke remains the same in both engines, being 3 and 4 for the Champion and 3 5/16 and 4¾ for the commander. (Both engines are 6-cylinder, "L" head type.)

The wheelbase of all 1950 models has been increased by one inch: Champion, 113 inches; Commander, 120 inches; Land Cruiser, 124 inches. Overall lengths of the cars are: Champion, 197¼ inches; Commander, 207⅞ inches; and Land Cruiser, 211⅞ inches. Tread on both models is less in the rear than in front; on the Champion it is 54 and 56⅞₁₆, and on the Commander it is 54 and 55½.

The instrument panel has been moved forward about four inches, providing the additional needed leg room in the front compartment. All instruments are grouped directly in front of the driver so that they can be checked at a glance.

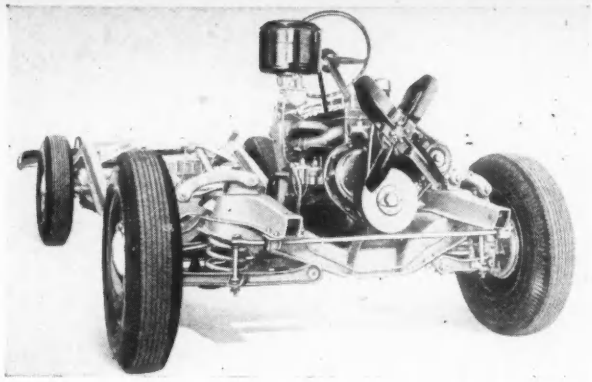
Outside of the front end, the bodies remain the same on all models. In keeping with the new speed lines, the aft end of the rear fenders has been redesigned, with large, vertical tail lights fitted into the trailing edge. An interesting note about the fenders (from a repair standpoint) is that they are the bolt-on type.

All models have a simplified symmetrical steering linkage, with center-point linkage being used on the Commander and Land Cruiser.

Commander tire size has been increased to super-cushion size of 7.60x15. The Champion uses four-ply 6.40x15 extra low-pressure tires.

In the Land Cruiser, Studebaker continues the use of nylon upholstery because of its popularity and proved durability, and leatherette trim. It is also being introduced on all Regal DeLuxe models of the Commander series and in two patterns on both the Champion and Commander convertibles. Leather upholstery is optional equipment on the convertibles at no extra charge. Foam rubber cushions are standard equipment in all mod ls, except for the lower priced DeLuxe Champion.

Although present Studebakers do not have automatic transmissions, a new Borg-Warner torque converter will be introduced on later models. These automatic transmissions will have forward low and high ranges, reverse, neutral, and park (a mechanical lock).



CHASSIS of the Champion shows new suspension system.

Road Test by the Editor

Knowing that our readers would be interested in, and somewhat skeptical of, the publicized improved handling characteristics of the Studebaker, we recently arranged for a road test of the "next look" in cars.

The car furnished to us by the Paul G. Hoffman Agency was a Studebaker Champion Regal De Luxe four door sedan. Riding along with me as a passenger and co-pilot was Shop Foreman M. J. Weilenman.

Sitting behind the wheel of the Champ did not feel much different than sitting in previous models, except that with the dashboard moved forward, there was a feeling of (and actually) considerably more leg room.

Locking the overdrive handle (on the dashboard) out, we drove out of the garage and hurriedly headed from town. I was anxious to really give it a test.

In traffic, the Champion handles admirably, giving you the protective feeling of a bigger car, but the lightness and vision of a small car. At a stop signal, a Plymouth owner pulled alongside and queried, "How do you like it?"

Unable to give him a full reply, I answered, "All right, so far."

He was somewhat skeptical as to acceleration, so I quickly pushed in the overdrive handle, and shot away with the signal. The last time I looked he was still far behind.

Don't get the impression, though, that the Champ is a terror on acceleration. In first and second, and in the lower range of speed in high, it is actually somewhat sluggish. From about 45 or 50 mph on up, pickup is quite good.

Driving the car on out to a deserted stretch of highway, we performed a series of acceleration tests. These tests, however, cannot be considered as accurate (since they were performed with a stop watch, although they are an average of several runs) but, at least give an indication of the car's capabilities.

TEST	WITHOUT OVERDRIVE	WITH OVERDRIVE
0-30 through gears	5.7 secs	6.0
0-60 through gears	17.7 secs	16.7
20-60 in high	15.25 secs	——

After the acceleration tests, we wound the car up tight in low overdrive and second overdrive, with the speedometer indicating approximately 55 and 70 mph, respectively. Unable to open the car up to its fullest extent, a rough guess at the Champ's top speed would place it at around 80-85 mph. (Studebaker owners interested in more acceleration and top speed could install a Weiand or Evans high compression —8:1—head and/or Weiand dual manifold. Each of these give an increase in horsepower of about 12½ per cent, although the dual manifold installation is quite difficult.)

Next, we headed for the mountains, for I was eager to find out if Studebaker had improved the cornering and ride characteristics with the newly-designed front end. Studebaker has made claims that the raking of the control arms to the rear has the effect of cushioning the ride on rough roads, since the front wheels tend to "travel away" from a bump as the car is driven over it.

Taking sharp, hairpin turns at full throttle, and occasionally releasing the steering wheel, I found that the car had amazing recovery. There was no tendency of the car to rock back and forth several times before it righted itself—it came to an even keel almost automatically. This new design, plus a slightly different steering linkage arrangement, evidently saw considerable research and testing.

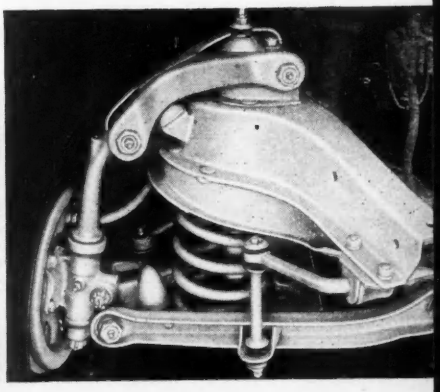
On bad, angling dips, taken at high speeds, there was no bottoming. And on all corners, there was less tire squeal than on previous models.

The hill-holder is probably one of the best features of the Studebaker, particularly for the women, and is the least publicized. With your foot off the throttle and brake pedal, and with the clutch pedal in, it prevents you from rolling backward on hills. The brakes do not release until you engage the clutch. The hill-holder does not engage except on an upgrade, or if you make a sudden, lurching stop and then try to back up.

The fact that this car was tested on a day when the temperature was 103, and no overheating, vapor lock, or other problems (usually attendant with high temperatures and road test conditions) were encountered, was a fine tribute to the Champ. And considering that the Champion is basically an economy and not a high-performance automobile, the 1950 model deserves much of the praise heaped on earlier models by enthusiastic Studebaker owners.

INTERIOR shot of the Studebaker Champion shows the instrument grouping.

CLOSEUP of new front end suspension.



California Road Race

by **ALMA RHODES**

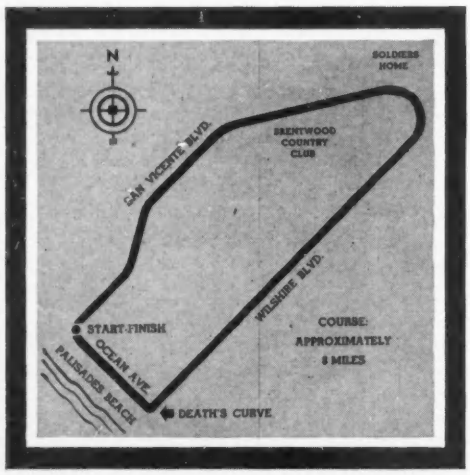
IT'S SO LONG ago that some things are hazy, yet the California Road Races were so interesting that I'll never be able to entirely forget them. I recall the 1914 race on Feb. 28th, which was won by a comparative dark horse, Eddie Pullen. It was much more interesting than the race held two days earlier from the reports I heard of that race.

Do you recall where the Santa Monica course was? Some people speak of the Speedway between Ocean Park and Venice as being the race course, but they never saw a road race there. The course started on Ocean Avenue in Santa Monica, turned northward on Wilshire Boulevard and turned left again at San Vicente Boulevard, ending up on Ocean. The course was 8.4 miles long and made a roughly rectangular-shaped affair.

Grandstands were placed along Ocean Avenue, but people lined the guard rails all the way around the course. The course was described as the safest, fastest and best-guarded course in the world.

We drove to Santa Monica in our new Model T Ford touring car, arriving there at around 9 A.M., which was actually quite late, for the stands were almost filled and we had quite a time finding seats. Even after we were seated, people were still arriving. They came by way of Venice (along Ocean Avenue and over the 7th St. bridge), by way of Wilshire Blvd. and on the Pacific Electric cars. I heard later that the P.E. carried the largest load it ever had.

While sitting in the stands, we heard people discussing the Vanderbilt Cup Race that was held two days earlier, on February 26th. It was a 35-lap race (294 miles), and also started at 10 A.M. There were 15 cars entered in that race, which was won by Ralph de Palma at an average of 76.7 mph.



Barney Oldfield, driving a Mercer, was second, W. Carlson, in a Mason, was third and Earle Cooper, in a Stutz, was fourth. Only five cars of the fifteen entered were able to finish. Prizes for that race were the same as those announced for today's Grand Prix: First—$3500, Second—$2500, and Third—$1500.

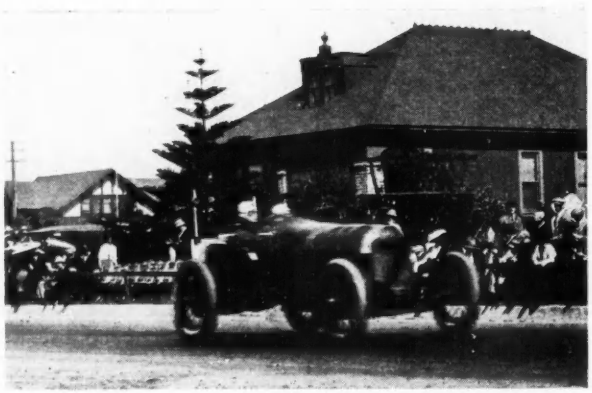
Today was to be a bigger race, though, for along with the previous 15 entries, there were four more cars, plus Teddy Tetzlaff in his Fiat. He was the big drawing-card for this race and along with Oldfield, de Palma, and Cooper, was co-favorite.

The course had been gone over thoroughly since the last race to put it in the best of shape. At the so-called "Death Curve" (Ocean Ave. and Wilshire Blvd.) a carload of rock had been brought in and mixed with oil to make the curve faster and smoother.

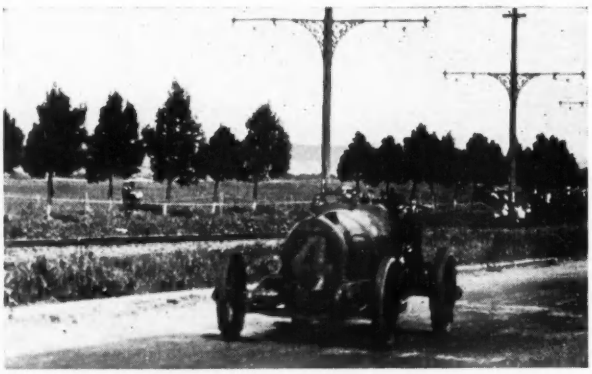
Only 17 of the 20 entries were actually able to start, Bert Dingley, Harry Grant and W. Carlson being the ones

(*Continued on page twenty-four*)

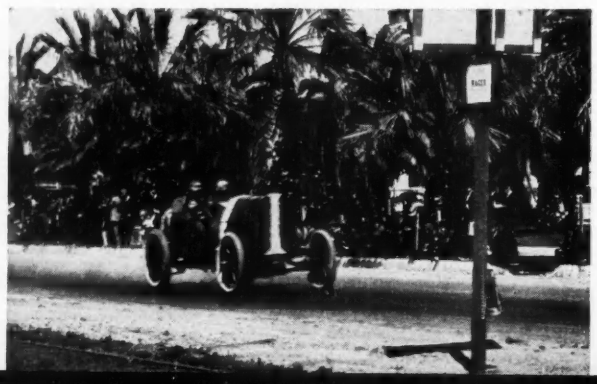
BARNEY Oldfield driving his Mercer down Ocean Avenue.

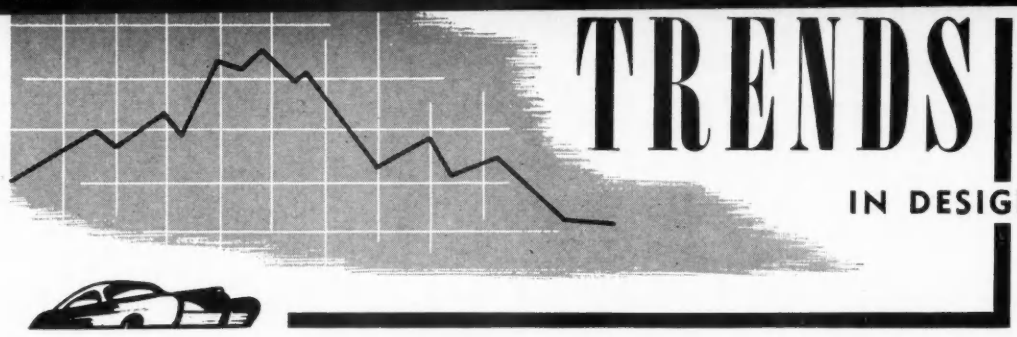


DRIVER Eddie Pullen, winner and dark horse of the 1914 race.



NO. 1—Driving a big Fiat, Tetzlaff failed to finish the big race.





TRENDS IN DESIGN • POSTWAR AUTOMOBILE

by AUSTIN M. WOLF, *Automotive Consultant*

NOTE: This article is a digest of the article, "Technical Highlights of Postwar Automobiles," Parts 1 and 2, which appeared in the May and June 1949 issues of the SAE JOURNAL. This is the first part of the digest.—Editor.

IN THE CLOSING years of the war there was considerable speculation regarding the postwar automobile, but in view of the insatiable demand for vehicles, production from available jigs, tools and dies seemed more feasible than to attempt to make immediate modifications. No experimental work was permissible during the war years so that an immediate introduction of brand-new models was out of the question.

In the middle of 1946, Studebaker courageously pioneered a bold new design in which the powerplant and the passenger compartment were moved considerably forward, individual front fenders ceased to exist by being merged more completely into a front "square-ended" sheet-metal group balanced by a corresponding trunk mass at the rear; the detachable "rear fenders" projected a minimum amount from the widened body contour to break up an otherwise monotonous panel running the length of the car. Kaiser-Frazer introduced, in early 1947, their Darrin-designed, smooth-contoured cars with the flat front fender apron sweeping back along the body to join the rear fender, with a sharp corner at the belt line. Packard introduced its roadster in the summer of 1947, prior to the remaining models, in which large radius curves predominate, to the exclusion of straight lines, with emphasis on the body width below the well-filleted belt. In early 1948, the Cadillac and the Futuramic Oldsmobile came upon the scene, the latter particularly forecasting the general conception of General Motors vehicles to come. Hudson followed in the spring with its low-hung monobilt body and frame, a rearwardly tapering low-placed side panel suggesting forward motion. Late spring unfolded the new Ford, Mercury, and Lincoln lines. Not until this year did the remainder of the industry get into full production on its new designs.

The American postwar cars incorporate the following features: low silhouette, the passenger compartment moved forward so that the rear seat is clear of the wheel housings, the glass area all around considerably augmented, rearward placement of narrower windshield posts, easier access and egress, interior dimensions increased, dual ducts leading to the body interior from the front grille for ventilation, and front and rear fenders that have either lost their identity or their individuality. Compression ratios have been upped in many cases and Cadillac has finally released the powerplant it has been working on for many years. With an eye to the future, the Kettering engine, as found in the Oldsmobile, has a block design that will remain unchanged for a decade. The 1948 Buick dynaflow transmission marks a new performance in acceleration.

While there have been some slight increases in wheelbase, there is also a trend toward reducing it, as well as overall lengths. The wide space between the radiator core and the grille has been reduced, cutting down unnecessary overhang, as exemplified in the Chrysler-built cars. While the Pontiac has increased its wheelbase from 119 inches to 120, its overall length is two inches shorter. Plymouth has been reduced six inches on its P-18 in spite of the wheelbase going from 117½ to 118½ inches. Dodge dropped only ⅞ inches but upped its wheelbase four inches to 123½ on the Coronet and Meadowbrook. De Soto has a four-inch greater wheelbase with only ¼ inch less overall but with the front wheels cut to a greater angle to maintain the previous turning radius. Chevrolet has reduced its wheelbase from 116 inches to 115 and the overall, ¾ inch. The Buick "50" and "70" have a three-inch shorter wheelbase, 121 inches and 126 inches, respectively. While the Lincoln has a 121-inch wheelbase, its companion, the Lincoln Cosmopolitan, has 125 inches, the overall lengths being 212½ and 220 inches, respectively. The trend toward shorter cars is indicated by the Plymouth P-17, with its 111-inch wheelbase and the Dodge Wayfarer with 115 inches. Both of these shorter-wheelbase chassis are equipped with a three-passenger coupe and a two-door sedan. The Plymouth P-17 also has an all-steel suburban while the Dodge Wayfarer has a roadster.

There is a tendency to decrease weights. Chevrolet has painstakingly pared down wherever possible. The new Ford design is considerably lighter than the previous one.

A review of the various features in the new vehicles will indicate the status of postwar designs as of this date, and should establish a perspective on the subject. It indicates that the ultimate postwar car, with emphasis on initial cost and economy of operation, has not yet arrived.

Engines

Compression ratios are generally on the increase, ranging from the incidental 6.5:1 to 6.6:1 in the Chevrolet (due to enlarging the size of the spark plug and changing from a concave to a flat inlet valve head) to 7.5:1 in the new Cadillac (6.70:1 for export). The Oldsmobile Rocket and the Chrysler 8 engines have a 7.25:1 ratio, the remainder of the Chrysler-built engines having 7:1. While the Cadillac and Oldsmobile engines will step up their compression ratios in

(Continued on page twenty-two)

TREND OF THE FUTURE

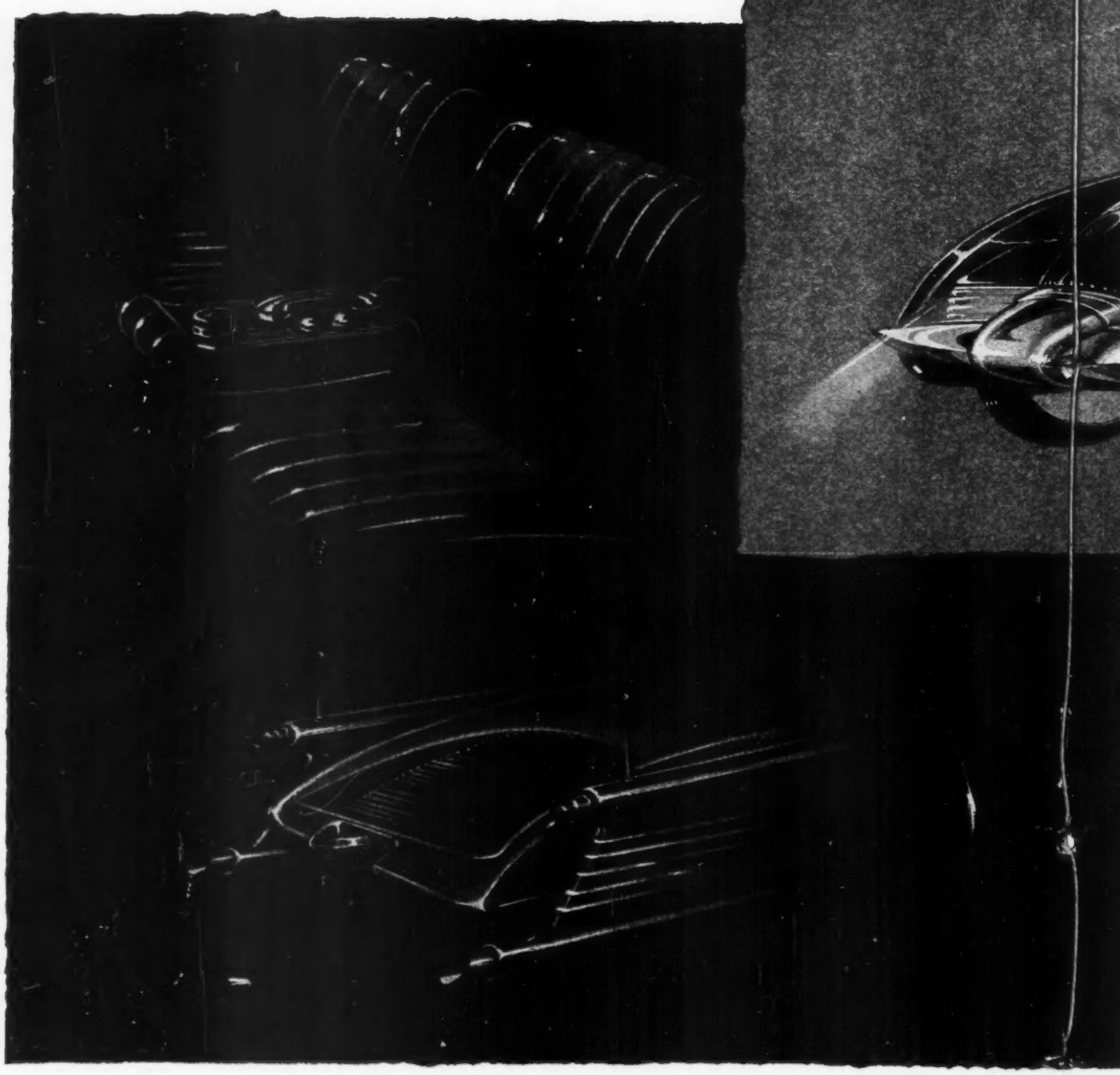
This month's presentation by Colonel Alexis de Sakhnoffsky is a sports design for a chassis with the engine in the rear.

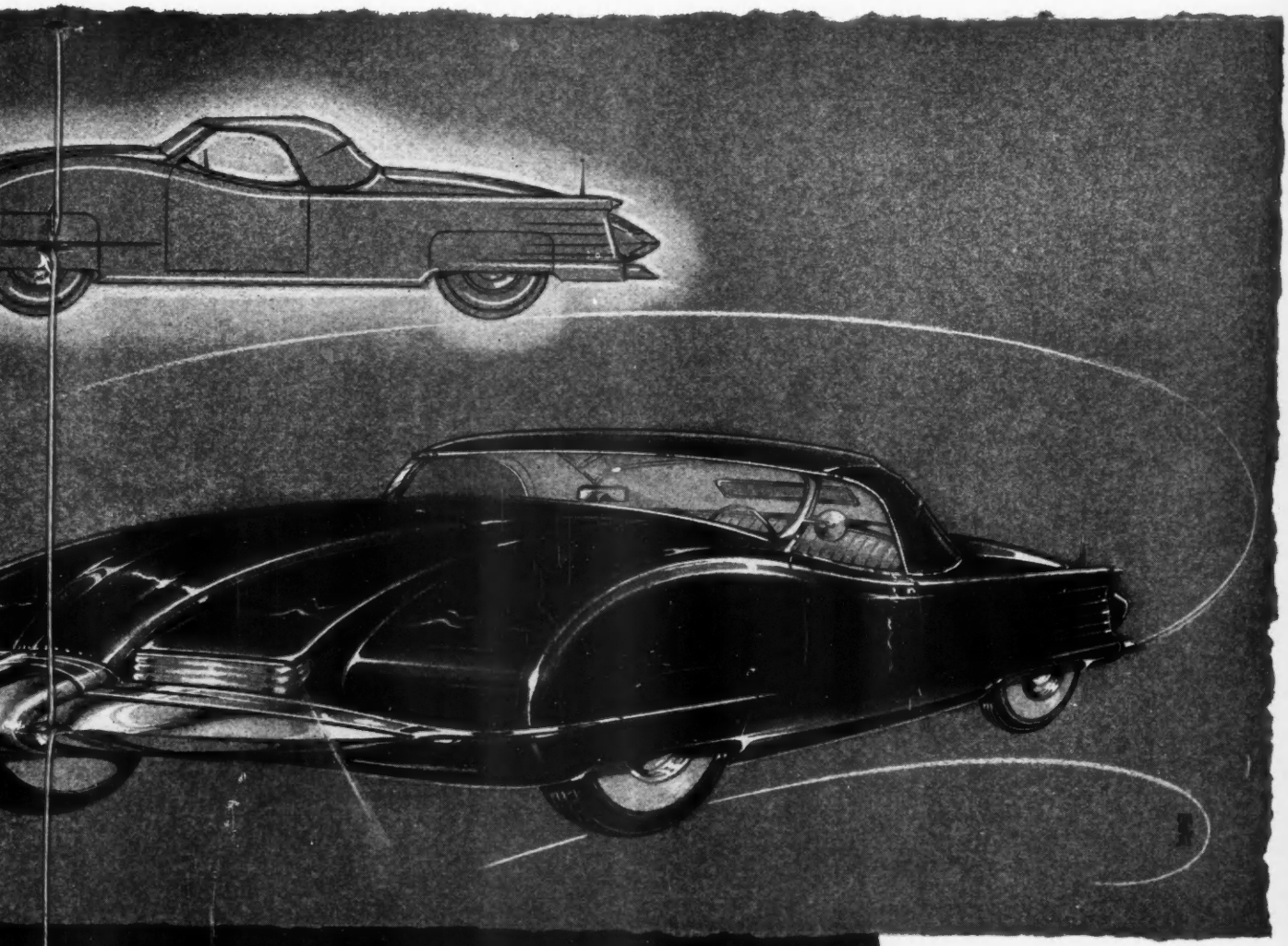
The top elevation shows the general design of the car, with the driver placed well forward for greater visibility. The downward sweep of the waistline at the windshield provides the popular low position for the elbow, without actually cutting away the door.

Other interesting features of this design include massive bumpers with a molded rubber center piece, an arm-rest with a concealed telephone and radio controls, a shallow instrument panel in conjunction with a simply-designed steering wheel, and a rakish sweep of the car at the rear.

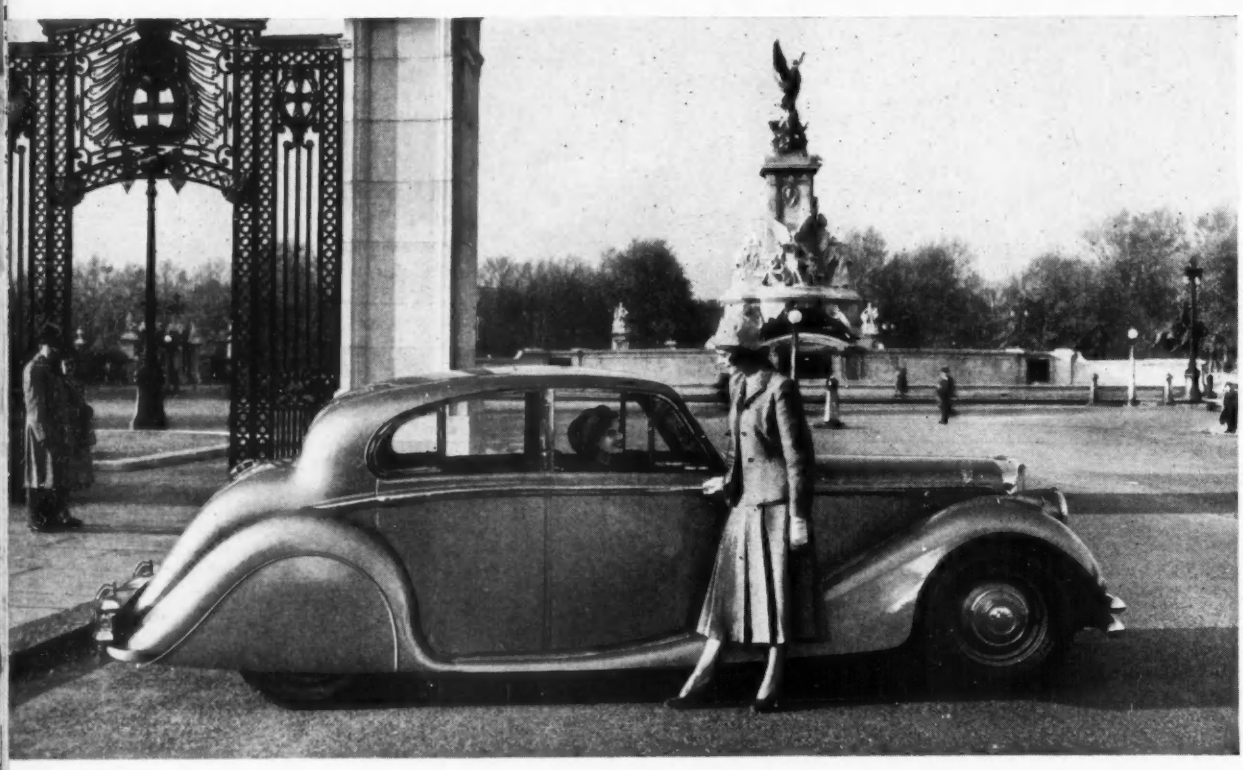
Trend of the future

DRAWINGS BY
COLONEL ALEXIS DE SAKHNOFFSKY





MOTORING Showcase

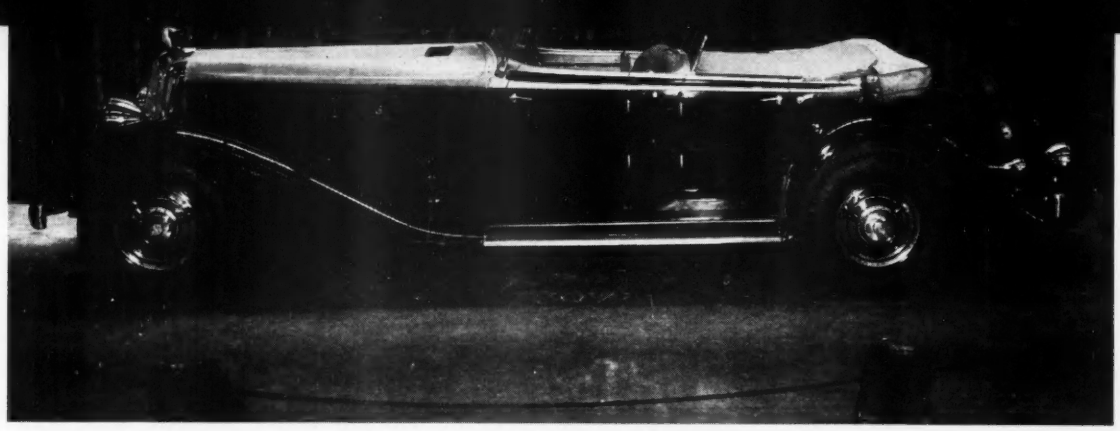


JAGUAR SALOON—Serving as a suitable backdrop for the new Jaguar Mark V Saloon is the Queen Victoria Memorial, in the square before the entrance to Buckingham Palace. With this new Jaguar there is a choice of either a 2½ litre or 3½ litre engine. Both engines are six-cylinder, overhead valve, with the small one having an actual displacement of 2663 cc (162.45 cu. in.) For the 3½ litre, bhp at 4600 rpm is 102 with a compression ratio of 7.3:1. Suspension is torsional, independent in front and half-elliptics in the rear. Tubular shock absorbers are used at the front wheels; Girling P.V. 7 hydraulic dampers are used at the rear.

Body features include concealed door hinges and push-button door handles. Tools, provided with the car, are housed in a specially-shaped container in the rear deck lid. The spare wheel is housed under the tool locker.

Instruments include a 120 mph speedometer, a tachometer, ammeter, oil pressure gauge and a water temperature gauge.

1938 FIAT—This trim Model "1500" Fiat is powered by a six-cylinder, valve-in-head engine of 1493 cc (91.07 cu. in.) capacity. Compression ratio is 5.75.1. while bhp output is 45 at 4400 rpm. The transmission is a four-speed gearbox, using a single-plate dry clutch. Suspension is independent coil in front and semi-elliptic springs in the rear. Hydraulic brakes are used on all four wheels. Top speed is 72 mph.



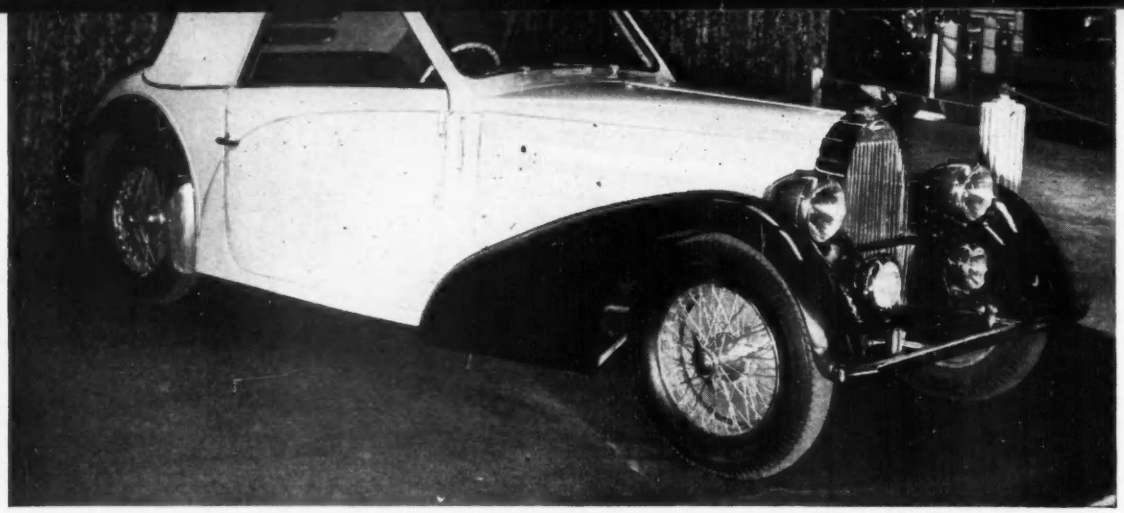
INTERNATIONAL SPORT CAR SHO

CHRYSLER IMPERIAL—A '33 sport phaeton, designed by LeBaron, who later designed the Newport Chryslers. Only 146 of these cars were built for custom bodies. The car is powered by a straight eight with 3½-inch bore, 5-inch stroke, using nine mains and developing 135 bhp. Vacuum-hydraulic brakes are used on all four wheels. Rear axle ratio of this 146-inch wheelbase Chrysler Imperial is 3.8:1.

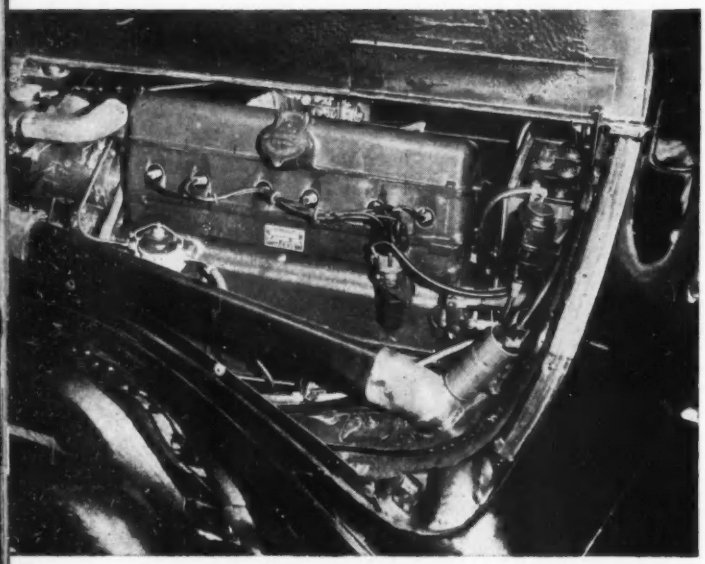
AUSTIN A-90—This combination sport and economy car is powered by a four-cylinder, 2660 cc (162.26 cubic inch) overhead valve engine, producing 88 bhp at 4000 rpm. The front wheels are independently suspended with coil springs, while semi-elliptics with an anti-roll bar are used at the rear. A Borg and Beck four-speed transmission is used. This is the same car that set several new stock car records at Indianapolis this year, including an average of 70.68 mph and 22 mpg for over 11,000 miles.

'39 FORD—This neat custom '39 Ford convertible is powered by a stock '37 Mercury engine, and features a Carson top. The nose and turtledeck are both smoothed off, the latter having a sunken license plate in the trunk lid. Note the use of special small wind wings for the low top.

R. E. PETERSEN



PETERSEN



BUGATTI—This impressive-looking convertible sedan is the pre-war (1938) Bugatti built in France for Ettore Bugatti's personal use. It was valued at $16,000. The engine is a straight eight and has a 3.3 litre (201.4 cu. in.) capacity. Double overhead camshafts are used for better engine breathing, while a supercharger is used to increase power. Engine develops 175 hp.

CITROEN "15"—The engine of the Citroen "15," made in France, is a 2867 cc (174.83 cu. in.) six-cylinder, valve-in-head engine. Maximum bhp at 3800 rpm is 77. An inverted type carburetor is used with the engine and it is claimed 25 mpg and 95 mph top speed is possible with this car.

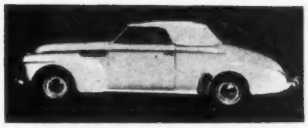
CUSTOM CAR—This unusually streamlined maroon job, featured on this month's cover of MOTOR TREND, was designed and built by Norman E. Timbs over a span of three years. It has a wheelbase of 117 inches, a 56 inch tread, an overall length of 17½ feet and weight of 2500 pounds.

(Continued on page twenty-four)

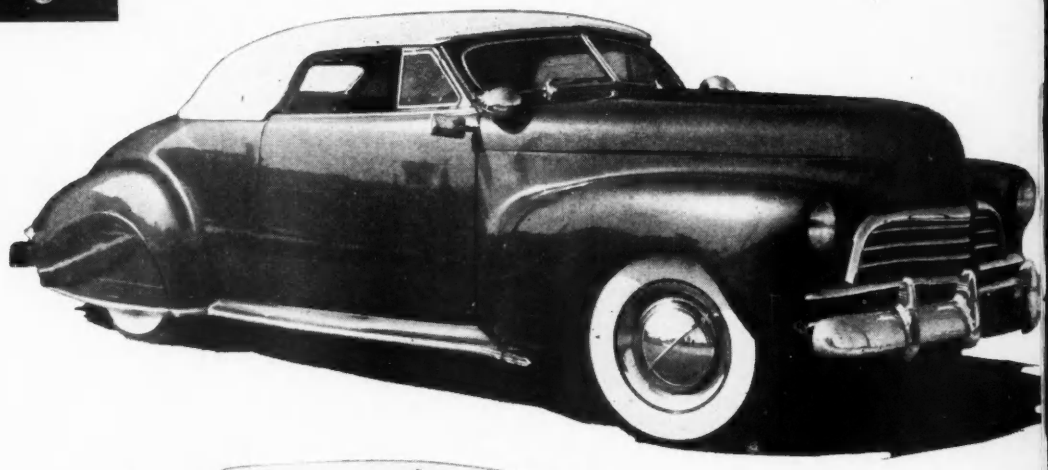
J. MEDLEY

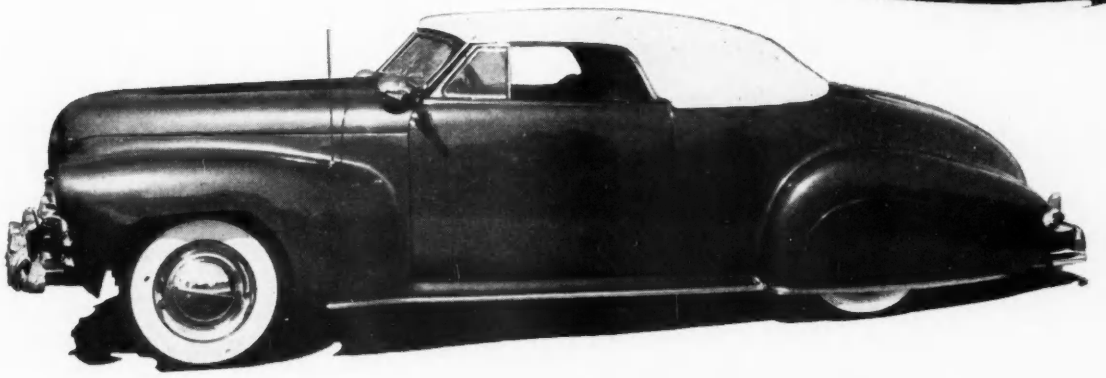
RESTYLING

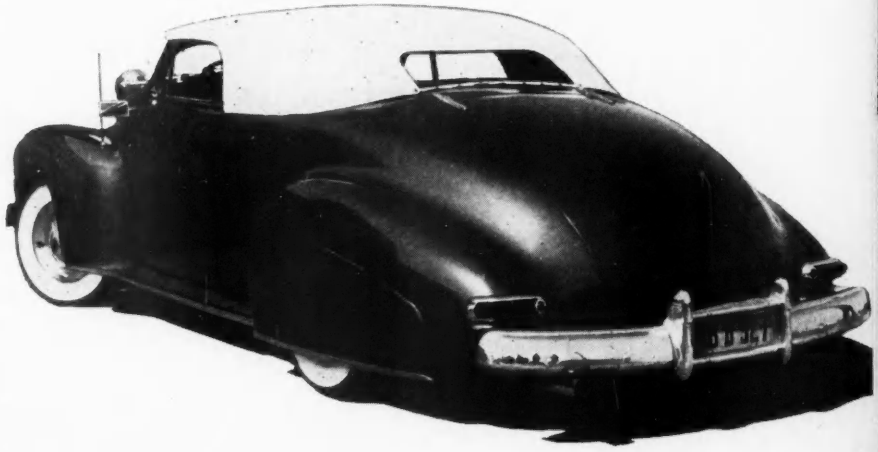
A 1941 BUICK CONVERTIBLE



BEFORE AND AFTER photos of a '41 Buick Special club coupe shows what can be done to restyle a stock model without detracting from the original lines. Work was done by several stylists for the owner, Vic Grace of Los Angeles, California.







The lowness of this Buick has been achieved by channeling the frame and chopping the top 3½ inches. The top was made by Carson. The front and rear fenders are both sealed into the body. All ridges have been removed, and the body has been almost completely dechromed.

The headlights are sealed into the fenders to carry out the smooth contour and a '46 Chevrolet grille has been substituted for the original Buick front end. The hood houses a Buick engine with a Harman & Collins super cam.

The smooth deck lid, doors and hood are all electrically controlled. Twin pipes can be seen extending slightly beyond the rear bumper. In place of the original tail lights, '49 Merc lights are used.

TRENDS IN DESIGN

(Continued from page fifteen)

the years to come, step by step, as better fuels become available, the test stand performance of the Kettering engine at 12:1 indicates a 40 per cent increase in mileage on 100-octane fuel, together with a jump in brake thermal efficiency of 32 per cent.

There have been only four increases in engine size, namely, the Mercury with its ¼-inch longer stroke, the Studebaker Commander with a ⅜-inch longer stroke and the re-designed Lincoln and Oldsmobile Rocket engines. The compression ratios in these four engines are 6.8:1, 6.5:1 (7:1 optional), 7:1, and 7.25:1, respectively. Inasmuch as the remainder of the industry has not increased displacements, it is believed that the peak has been reached. Cadillac has led the procession downward with a dropping of the displacement from 346 cubic inches to 331. Packard has three engines, all with 3½-inch bore and 7:1 compression ratio. Pontiac's standard compression ratio is 6.5:1 but 7.5:1 heads are optional. Kaiser-Frazer is using 7.3:1. In 1948, Willys introduced a six-cylinder engine of 3x3½ inches, 148.5 cubic-inch displacement, compression ratio 6.42:1, and developing 72 hp at 4000 rpm.

While Ford and Mercury continue with cast crankshafts, it is of interest to note that the Lincoln engine of 336.7 cubic-inch displacement has a shaft of the forged type with integral counterweights, running in steel-backed, triple-layer, copper-lead alloy bearings. The Cadillac and Oldsmobile five-bearing shafts have greater rigidity and torsional resistance over the previous three. Pontiac holds the balance tolerance of the crankshaft, flywheel, and clutch assembly to ½ inch-oz and the crankshaft balance assembly to ¼ inch-oz.

Higher compression ratios demand a new type of main and connecting-rod bearing material. The Buick, Cadillac, and Oldsmobile engines are using Durex 100-A with GM4167-M babbitt overlay.

Pistons and Rings

A steel-strut, split-skirt, oval, tin-plated, aluminum-alloy piston is being used by Mercury and Lincoln. The Oldsmobile Rocket engine is provided with steel-strut, tin-plated, slipper-type, aluminum-alloy pistons with slots below the ring belt, separating the piston head from the skirt to allow true crosshead functioning. The Cadillac T-slot, stanate-finish, aluminum-alloy pistons permit the use of a shorter connecting rod (6⅝ inch centers from 8¾ inch), which, when combined with a short piston stroke, results in a compact engine design of minimum size and weight.

Most passenger-car engines are using first and second groove compression rings of either the torsional-twist or taper-face design. The trend is definitely toward narrower compression ring width, either $\frac{3}{32}$ or $\frac{5}{64}$ inch, and of the thick-wall type. They provide better blowby control, reduce scuffing, and improve following ability. Plymouth is using two $\frac{3}{32}$-inch compression rings, the upper being chrome plated. The "thread finish" of the base metal is duplicated in the plating process and lapped. Oil rings are generally wider in order to carry wide slots for maximum resistance to plugging and clogging. The cylinder contact lands are made very narrow in order to take advantage of high unit pressure for maximum oil-scraping ability. The entire oil-ring contour has been studied to give good streamlining to thwart plugging and wedge contour channels and radiused slots are often incorporated. The two lower Plymouth oil rings are $\frac{5}{32}$ inch wide.

The industry has in recent years become aware of the importance of safe and quick breaking of ring and cylinder surfaces. Bore finishes are more closely controlled, the limit being within the range of 15 to 25 micro-inch.

Valves

Breathing capacity has been increased by using relatively smaller exhaust valve diameters as compared to the inlet. This is noted in the Cadillac and Oldsmobile engines, where ease of flow is still further increased by the inclined valve axes, which at the same time permit shorter rocker arms and reduce their inertia. To eliminate sticking, the Oldsmobile cast-iron valve guides are Parco Lubrited, a step used by Packard for several years.

Lubricating System

Chevrolet has replaced gravity-feed timing gear lubrication by pressure feed. A passage from the front camshaft bearing leads oil between the engine front plate and the cylinder block.

A new low-restriction type of oil filter element is now used by Buick in the AC type B-10 filter. The oil supply for the overhead system now comes through the oil filter and ensures clean oil for the rocker arms and valve mechanism. Since the direct line to the overhead is eliminated, there is more oil available for the bearings at low engine speeds.

DeLuxe Products Corp. has designed a removable sump for its filters so that, in changing the cartridge, it is not necessary to drain sludge and water from the filter sump. Puralator Products, Inc., is producing its micronic filter with plastic-impregnated paper in which the pores can be kept as small as 0.00004 inch. The accordion-pleated paper, if stretched out, reaches up to 10 feet in length.

The schedule for engine break-in announced last fall by Dodge called for an operating speed of 40 mph for the first 250 miles, thereafter 5 mph being added for each additional 25 miles traveled until at 350 miles the engine was considered run in. This was made possible by Parco Lubrite, which is a treatment of properly cleaned iron (and steel) particles resulting in the chemical conversion of their surfaces to a non-metallic, oil-absorptive coating consisting chiefly of iron and manganese phosphate. Since the coating results from actual reaction of the solution with the metal surface, it becomes chemically combined with the base metal and has greater adherence than could be expected from any coating depending upon natural attraction.

Fuel System

The lowered hoods have resulted in considerable emphasis being placed on the reduction in the over-all height of carburetors by their manufacturers. Carter Carburetor Corp. has developed a new down-draft dual carburetor that is appreciably shorter. Eclipse of Bendix Aviation Corp. has also been lowering its carburetors for Buick, Dodge, and Studebaker Champion engines. Power line and transmission developments, such as the fluid flywheel, overdrive, torque convertors, and the various semi-automatic transmissions, call for different carburetor performance requirements over the conventional clutch and hand shifting, and which all carburetor manufacturers have made.

Better distribution is always obtained when the intake manifold is parallel to the ground in spite of the engine crankchaft inclination on the chassis. This expedient is now incorporated in Ford-built engines.

Two methods have been brought out whereby the continuous use of premium fuel can be avoided. In the Thompson Vitameter, an alcohol-base solution is fed into the intake manifold during periods of low manifold vacuum, suppressing knock that would otherwise occur. In the Holaday two-fuel carburetor, premium fuel is only fed under like depression by means of a vacuum-controlled solenoid selector of the two needle valves and at all times from the accelerator pump.

Cooling System

More manufacturers are taking advantage of pressurized cooling to reduce the size of the radiator and give improved cooling under heavy engine output.

(Continued on page twenty-nine)

AUTO SHOW

(Continued from page eight)

race recently in Philadelphia's Fairmount Park, was displayed by its owner, J. B. Van Sciver. It is interesting to note that in competing over the same 8-mile course in 1910 and 1911, Mulford finished second both years.

Most ponderous car in the show was an 1893 Custom Stage Coach—a sort of forerunner of the Grey Hound bus, a multi-seated affair propelled by two steam engines, one for each rear wheel.

The oldest of the antiques was the Orukter Amphibolos, created in 1804 by Delawarian Oliver Evans and considered to be a true primitive automobile. Physically, it appeared to be a large barge (originally designed as a flat-bottom dredging machine) and made its 1804 appearance in Philadelphia by way of the Schuylkill and Delaware Rivers with a paddle wheel hooked to one of the rear wheels. The four-wheeled motor barge was steam-driven and is considered as the forerunner of the White and Stanley Steamers of the 20th Century.

The car was manufactured in Maryland but in the first decade of the 1800's, Pensylvania legislators steadfastly refused to give Evans permission to manufacture or operate his steam wagons in their state, considering his petitions outlandish and dangerous.

Although somewhat battered, the 1908 Thomas Flyer was one of the most remarkable antiques at the Auto Show. This car was driven by Montague Roberts and George Schuster to first place in the fabulous nearly-around-the-world race from New York City westward to Paris, France. Schuster and Roberts were awarded the N.Y. Times-Paris Matin Trophy for this amazing feat in 1908. Even today the trip would be considered a grueling proposition. Montague Roberts, who was present at the Auto Show, outlined the route as follows:

The Thomas Flyer was driven by its two-man team from New York City to Albany, N.Y., to Buffalo, N.Y. and from there to Chicago, Illinois. From Chicago the trip west was accomplished over flooded roads across Iowa and Nebraska, through ruggedly constructed mountain roads across the Rockies and into San Francisco.

All contestants' cars were then shipped by boat to Seattle. Roberts and Schuster transhipped to Alaska and were informed that their rivals had had their cars shipped directly to Japan. The Thomas Flyer was returned by boat to Seattle, shipped to Japan, and then transhipped to the Siberian mainland. From that point the race was by road and fields across Siberia to Moscow, then to Berlin and finally into Paris.

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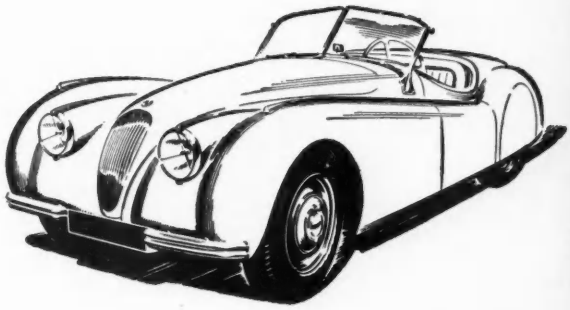

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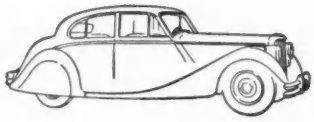

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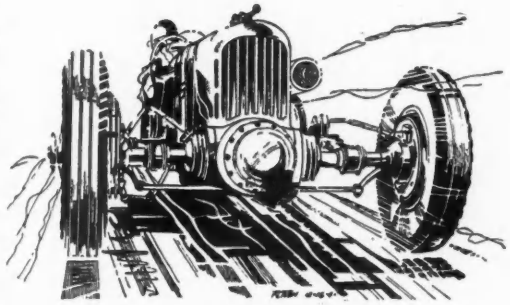

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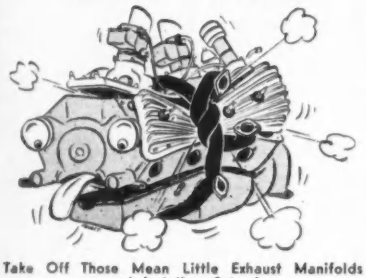

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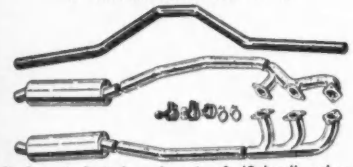

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CALIFORNIA ROAD RACE

(Continued from page fourteen)

that had to drop out. This left the entry list as follows:

CAR NO.	DRIVER	TYPE CAR
1	Teddy Tetzlaff	Fiat
2	Spencer Wishart	Mercer
3	Gil Anderson	Stutz
4	Eddie Pullen	Mercer
6	Billy Taylor	Alco
7	Barney Oldfield	Mercer
8	Earle Cooper	Stutz
9	Huntley Gordon	Mercer
11	Frank Goode	Apperson
12	Ralph de Palma	Mercedes
14	J. B. Marquis	Sunbeam
15	C. Muth	Marmon
17	Guy Ball	Marmon
18	Frank Verbeck	Fiat
19	Tony Janette	Alco
20	B. Rickenbecker	Mason

As 10 o'clock approached, the people were quite excited. The weather was just right for a race, with a gentle, cool wind blowing from the north. At exactly 10:00 A. M., Tetzlaff roared across the starting line and the race was on.

The other cars started in sequence (according to their numbers) at 15-second intervals. At 10:20, Tetzlaff was still in the lead, but had to come in to change tires and dropped back to second. This put Eddie Pullen into the lead.

An hour and 15 minutes after the race started, Wishart had moved into the lead, at an average speed of 84 mph. This was at 12 laps and Pullen was second, Tetzlaff was third and Gil Anderson was fourth.

Two cars had already dropped out, Frank Verbeck in the second lap, and Earle Cooper in the fifth lap, both due to broken valves. Verbeck had to walk to to the pits and as he arrived there, his teammate, Tetzlaff, rolled in. Teddy was out of the race on the 18th lap with a broken connecting rod.

At noon, while my husband and I were eating sandwiches from our picnic lunch, Wishart came into the pits. He went out fast enough to hold the lead, however. At 20 laps, he was averaging 83.6 mph, with Barney second and Anderson third.

Hard luck overtook the leader at 12:45 and he was forced out with a burned-out bearing. DePalma went into the lead, with the Frenchman, Marquis, second.

At the 25th lap DePalma was still first, but the Sunbeam was closing fast. In six more laps, Marquis had pulled into the lead, but evidently he was driving too hard for I saw him pull into the pits with a steaming radiator. His mechanician, Tom Alley, climbed over the engine while the car was still moving, and had the radiator cap off as they pulled to a stop. They left the pits in just about a minute, to hold onto the lead.

Again hard luck overtook the leader, for as the beautiful Sunbeam approached "Death Curve" on the next time around, the car suddenly rolled over three times, making a complete wreck of the car and the guard rail. There were various reasons given for the accident—one that Marquis was going too fast, and another that he returned a wave to a woman in the grandstand, which caused him to lose control. I don't know for sure, but I was happy to hear that he was out of the hospital a week later. He was injured internally, had face, head, and body cuts, and suffered from shock. His mechanician, Harry Hough, was out of the hospital before Marquis.

At the 36th lap, Pullen was back into the lead, with Oldfield second, Anderson third and DePalma fourth. Barney dropped out on his 36th lap with engine trouble.

Eddie Pullen lead for the remaining 12 laps, and as a comparative darkhorse, crossed the finish line as the Grand Prix champion. He set two new records in winning the event — an average of 79.2 mph for 300 miles, and an average of 77.2 mph for the 400 miles. His first record was a new world's record, bettering Tetzlaff's former record by 0.5 mph. Pullen drove a Mercer, which was older than both of those driven by his teammates, Oldfield and Wishart.

After the race, we joined the throng on its homeward journey and heard nothing but fine comments on the sportsmanship displayed by the drivers, who all appeared anxious to return next year. The race was so successful that Mayor Dudley announced that future races should be managed by the local people instead of by outside interests. Along with tens of thousands of spectators, I was thoroughly pleased with the day's race, and vowed to return the next year.

CUSTOM CAR

(Continued from page twenty)

Seating two persons the cab affords excellent visibility, since the Buick engine is placed behind the driver. The area from the engine to the rear axle also houses the fuel tank and a spare tire. The entire aft end of the body (hinged immediately behind the cab) can be raised hydraulically for access to the engine compartment. The running gear includes 6.00x16 tires in front, 7.00x16 tires in the rear, hydraulic brakes and a swing-type rear axle. The radiator is mounted in the front, with the water lines running along sides to the engine. The bumpers are made from sturdy chrome-moly tubing. Instruments include a speedometer, a tachometer, an ammeter and fuel pressure, fuel quantity, hydraulic oil pressure, air pressure, oil pressure and water temperature gauges.

DUSTER DATA

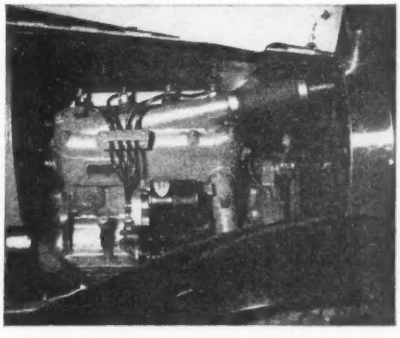
BIGGEST NEWS OF 1911, at least for non-car owners, was the organization of two automotive concerns whose sole productivity was to be turned to the manufacture of taxicabs. Had the day of the motor car truly arrived? Would it be possible for gas engines to transplant horse-drawn Hansom cabs?

The Shaw Livery Company of Chicago and the Diggs Ordnance Company of Sharon, Pennsylvania, thought so and went to work on their motor taxis in great secrecy. The Shaw product was powered by a Continental 27.2 hp engine. It was a tourer model of 120-inch wheelbase and offered a "luxury" ride on 5-inch tires.

The other taxi was the Twombley, pictured here, which is still rated as one of the most unusual of American-made automobiles. The 1911 model Twombley, identical to the Twombley owned and refurbished by Jimmy Sutton of Bridgewater, Pennsylvania, was one of 100 of the specially designed light cabs placed in service in New York City. They were designed to operate at a profit to their owners at 25 cents a mile.

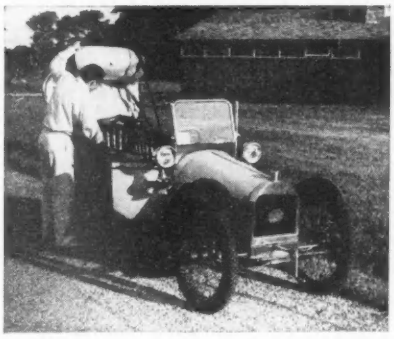
Most unique feature of the Twombley was its seating arrangement, which placed the lone passenger directly behind, rather than beside, the driver. Strictly a two-seater, it limited the hackney to one passenger at a time, under the Diggs-designed idea. The Twombley was also known as the "Crease-Crusher" or the "Tailor's Friend" and experienced a brief faddist popularity among sparking couples.

Brash young swains who didn't give a hoot about tailor's bills would ride the Twombley, top down, breezer style, with their squealing dates sitting on their laps. The cabbies liked the arrangement because they'd charge 60 cents a mile, rather than the scheduled two-bits.—But talk to an oldster who did a "double-up" in a Twombley and he'll tell you the "Crease-Crusher" was the finest courting set-up since the abandonment of the bundling board.



TRACY GILPIN

ENGINE of the Twombley. Cooling is by thermosyphon principle. Magneto ignition is shown here. Gasoline tank was located just forward of the dash. Note how crank is located directly through the radiator.



JIMMY SUTTON, Bridgewater, Pennsylvania, antique-car fancier, is pictured here with his 1911 Twombley two-seater as he demonstrates ease with which 1911 Twombley convertible top may be put down.

For those with a technical interest in the Twombley rather than romantic memories of the "Tailor's Friend," the Twombley was manufactured from 1911 to 1914. The only known Twombley still in perfect operating condition is the one pictured here. Its owner purchased it for junk value and reportedly spent $800, not including his labor, in reconstructing the car to its original 1911 condition and outward appearance. The car is yellow, with black trim and red leather upholstery. No records of the Diggs Company exist, but it is thought that approximately 300 of the Twombleys were made.

The models were all two-seaters of the Landaulet type and had 100-inch wheelbase with an abnormally narrow 44-inch cross-tread. This, coupled with its 30-inch by 3½-inch tires, gives the car the appearance of being constantly on the verge of toppling over.

The engine is approximately 15 hp of L-head type with four water-cooled cylinders in a single block casting with valves on the left side of the block. The

(Continued on page twenty-six)

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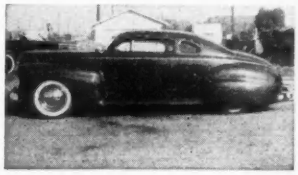

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Alhambra, Calif.

(Continued from page twenty-five)

cylinders have a 2¾-inch bore and a 4-inch stroke and are cooled by a water-jacketed block with a thermosyphon cooling system.

Rear Axle and Transmission

Annular ball bearings are fitted to the floating rear axle. The front axle is tubular. The 1911 model Twombley has both a friction and planetary-type transmission with two shifts. The 1912 and 1913 models have a three-speed selectively operated type transmission. Steering is of worm and sector design and the steering wheel, because of the small bucket seats, is adjustable so that it can be pulled up to permit the driver to crawl under the wheel. It can then be readjusted to the desired height.

The brake and the chain drive are both located on the left rear wheel. Lights are of both gas and oil variety and the ignition is magneto type. The Sutton-Twombley can reach 40 mph and at about 25 mph (its average comfortable cruising speed), its owner reports 43 miles to the gallon of gas.

Dashboard

The dashboard is barren of instruments of any nature and like the hot pilots of the early thirties, one drives a Twombley by the "seat of the pants" method. Overheating most frequently occurs in the transmission directly under the driver. It is separated from the driver only by a leather-padded wooden seat cover. When the front seat gets too hot for comfort, you park the Twombley in a shady spot, and remove the seat to permit the transmission to cool more rapidly. You also give your passengers a chance to relax aching thigh muscles and shake out their dusters or bemoan the loss of those knife-edged pants creases.

The Octoauto

1911 was the year, too, of the Octoauto, an eight-wheeled affair designed by the Reeves Pulley Company of Columbus, Indiana, as the answer to rough roads. "The whole arrangement is very simple and is a shock-absorber beyond the dreams of the neurotic," the manufacturer stated. But also beyond the dreams of the neurotic was the tire-changing problem. One Octoauto owner whose eight-wheeler blew seven of its eight tires on a twelve-mile trip to Chicago was reportedly seen firing a revolver into the hood of his "only easy-riding car in the world" in an apparent effort to end the Octoauto's misery. Then the unhappy owner of the deceased "wonder car" took several pot shots at taunting spectators. In a final frenzy, he turned the gun on himself. In a helpless rage he listened to the harmless click of the hammer on already expended cartridges. The owner recovered from his temporary derangement and lived out a normal life-span expectancy, but the Octoauto's existence was a short one. One can't help but wonder if the Octoauto didn't have some influence on the design of the present day Pat Clancy six-wheel Indianapolis racer.

Hand Crank, "Sod Pan"

That same year, 1911, saw the beginning of the end for the hand crank, referred to by its detractors, creators of the new fangled semi- and fully-automatic starters, as "automobiles" vermiform appendix, useless and dangerous to life and limb . . . a last relic of crudity on the otherwise perfected modern automobile."

At that time, too, the crankcase pan was referred to as the "sod pan" because of its tendency to dig divots on rutted country roads. And it still does.

Mock Bell

Motorists in Massachusetts were annoyed at State Representative J. A. Mock for introducing a bill requiring cars to sound a bell which would ring a warning every revolution of a car's wheels. A backyard inventor, T. A. Summers created a signal to conform with the proposed law—a bell hooked under one front fender and activated by a piece of metal tied to a leather thong attached to the front-wheel hub. Thong and clappers needed constant replacement, but the Summer's fender bell outlived the Mock-bell legislation.

Match Race

On March 19, 1911, a 100-mile match race was scheduled for the Los Angeles Motordrome. The two contestants were Teddy Tetzlaff at the wheel of a 46 horse-powered Lozier and Ralph DePalma, driving his Grand Prix Fiat that boasted 90 horsepower.

The partisan feeling of the crowd made them root for Tetzlaff and his Detroit, Michigan creation, but the smart money backed the foreign-built Fiat. The Fiat's bettors, offering odds as high as 20-1, lost plenty, but American car manufacturers, and the Lozier Motor Company in particular, gained tremendous prestige in the automotive field when Tetzlaff's Number 3 beat DePalma's favored car by six laps over the century distance on the one-mile oval. And in gaining his victory, Tetzlaff shattered the world's record for the distance with an average speed of 80.55 mph.

FOREIGN CAR RACE

(Continued from page nine)

blown limited.

In the event for class "A" cars, there was no attempt at handicapping, with the result that the eight-lap race developed into somewhat of a parade. Two sedans (a Hotchkiss and a Talbot Lago) competed in this classification. Winner was Donald Parkinson in the BMW, one of the outstanding cars on the track. Powered by a two-litre, three carburetor, six cylinder engine, the BMW is made under license by British Frazer-Nash. This car was the fastest car on the track, having turned :26.28 for one lap, or an average of approximately 68 mph.

The MG's handled exceptionally well for stock cars, with lap times fairly close to the midgets. The speeds turned by the MG's were also comparable to the average stock American car, which has an engine from three to four times the cubic inch capacity of the MG. The MG's superior performance on the half-mile paved track was probably due to its tight springing, high-geared steering, low cg, close-ratio four-speed transmission, and high speed engines which develop 54.4 bhp at 5200 rpm.

In the "B" Class heat races, Phil Hill, in a blown MG, had an easy victory, whereas Chuck Glassock won the second heat race in an unblown MG.

The three-lap trophy dash was an interesting event, pitting together a blown MG, an unblown MG, the BMW and the Jaguar SS-100. It appeared that Phil Hill, in the blown MG, with a handicap of ten lengths over the BMW, would not stand a chance of holding his position; however, by skillful maneuvering he outlasted the other cars to win. A surprise third was Arnold Stubbs, in the unblown MG, over the Jag SS-100.

The race for economy sedans was somewhat of a disappointment to most of the race enthusiasts, being a race around the inner dirt track, with three rows of hay bales placed in staggered positions on the home straightaway. Jimmy Martin, in a Fiat, came in first, with Roger Barlow pushing his Morris Minor convertible to second place.

The special three-lap match race placed Fay Taylour, in the fastest blown MG, against Jack Early, in the second fastest MG. Early started on the pole position and was hard put to fight off the challenge of the British Isles speed queen. Fay has motorcycle, dirt track and road race records to her credit in England, Ireland, Australia, New Zealand, South Africa, India, and Italy.

The main event was limited to MG's, the cars starting from handicap positions off their qualifying times and in inverted order. The first group of four were placed at the starting line, with the second group of four being in the southwest corner. Several lengths behind, another group of two were placed, while the southeast corner (a third of a lap from the finish line) was occupied by the two blown MG's.

The cars began from a standing start, and within a few laps it became apparent that it was merely a matter of time until the blown MG, driven by Phil Hill, would pull into the lead. Three laps from the end, Hill overtook Chuck Glassock, who started in the front line, and went on to win the race.

Most of the drivers showed remarkable skill considering that the majority were owner drivers and non-professionals. The cars were in no way hopped-up, but carried standard touring equipment, including stop lights which flashed on every time they took the turn. It appeared that most drivers were using standard fuel; however, odors emanating from some exhausts indicated that doped fuel was also being used.

CONVERSION FACTORS

Note: In MOTOR TREND, the reader will be confronted from time to time with unusual terms and expressions. Insofar as possible, these terms will be explained as they are used. When the metric system is used, the corresponding unit in the linear system is given in parenthesis. However, to acquaint those readers who are unfamiliar with the relationship between these two systems, the following conversion factors and comparison table are given.—Editor.

UNIT	MULTIPLIED BY	EQUALS
Cubic centimeter	0.0610	Cubic inch
Cubic inch	16.387	Cubic centimeter
Gallon (U.S.)	3.7854	Litre
Km/hour	0.6214	Mph
Litre	61.025	Cubic inch
Litre	1000.027	Cubic inch

KNOWN UNIT	CUBIC CENTIMETERS	CUBIC INCHES
1 Litre	1000.027	61.025
1½ Litres	1500.041	91.538
2 Litres	2000.054	122.05
2½ Litres	2500.068	152.563
3 Litres	3000.081	183.075
3½ Litres	3500.094	213.588
4 Litres	4000.108	244.100
4½ Litres	4500.122	274.613
750 cc	———	45.75
1250 cc	———	76.25
1950 cc	———	118.95

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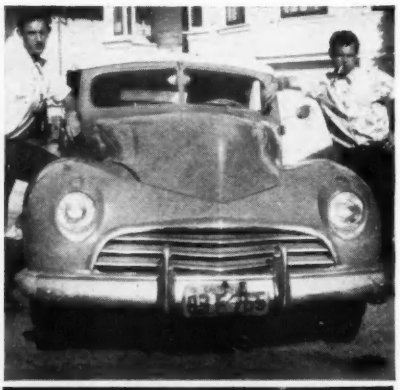
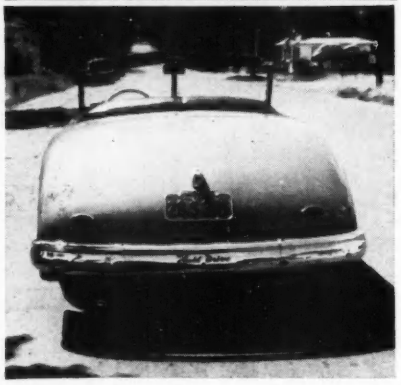
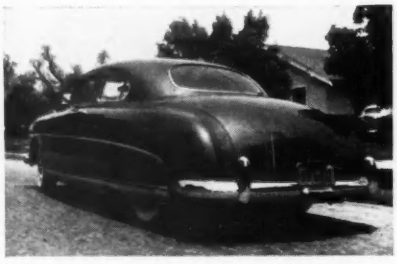
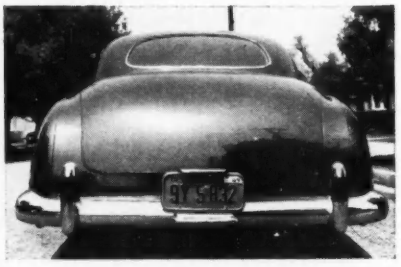


THIS '39 FORD V-8 convertible sedan, owned by G. L. Harlander of Oakland, California, has a stock engine. The body and top have been lowered and the nose and turtledeck have been smoothed off. The car also has a 1946 Chevrolet grille.

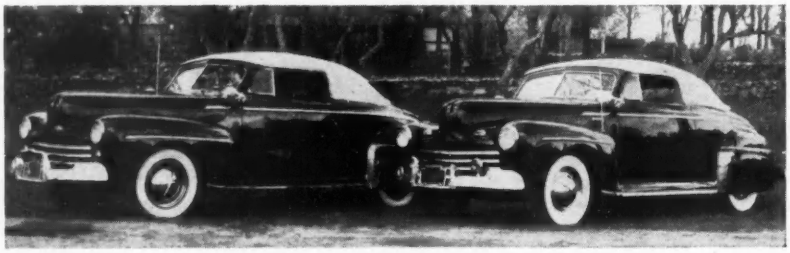


THIS CAR, with a wooden body set on a '40 Mercury frame, was made by Gene Dupertius, a cabinet maker. Powered by a full-race '40 Mercury engine, the car features a Dodge grille and DeSoto bumpers.





THIS '49 HUDSON has an unusually smooth appearance since the tail lights have been removed and the license plate has been placed on the bumper. The tail lights are installed in the bumper guards. The car belongs to Bill Tuttle of Tustin, California.



TWO CHOPPED V-8's customized by the owners, Ed Leeman and Ray Gross, both from Colorado. The car on the left is a black '48, with the top chopped three inches, dechromed hood and deck, has '40 Chevy tail lights and uses a stock engine with overdrive. The car on the right is a maroon '46, similarly customized, but using 8:1 heads and a dual manifold. Interior of both cars is in leather work.

TRENDS IN DESIGN

(*Continued from page twenty-two*)

Twelve to fifteen-psi caps are being used (Buick Dynaflows under arduous conditures of 240-250 degrees F.). Settings of three to seven psi are common. Water or other coolant loss is prevented and satisfactory performance of the car is materially assisted, even when climbing high or steep hills, as well as in high altitudes.

Ignition System

All ignition coils are now mounted on the engine close to the distributor, minimizing disturbance to radio and television reception, thanks to the work of the joint SAE-MRA committee on ignition interference. With a reduction of 75 per cent in the length of high-tension leads, Pontiac has found by tests that the terminal voltage at the spark plugs has increased eight per cent; they adopted the suppressor in the distributor cap last year. This year, all Chrysler-built cars have a 10,000-ohm suppressor so located, and combined with a low-resistance soft carbon tip acting as the center conducting brush in the distributor cap, eliminates the previous condenser between the coil and the distributor to prevent interference.

Lighting

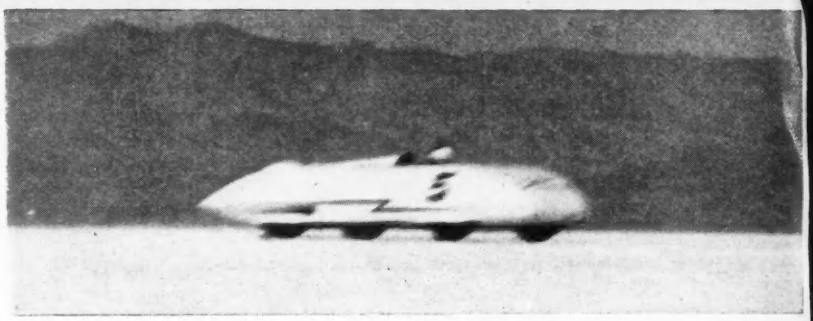
The average 1949 car has 18 bulbs and one model has 32. If a car were to be equipped with all the bulbs presently used, it would have a total of 46 and the connected load would add up to 83 amperes. There is never an occasion when all the bulbs would be used at once, hence the 35-amp generators of the new cars can handle the usual night-time lighting load with ample reserve for ignition, heater, and radio, with a surplus for charging the battery.

Since the war there has been a general trend toward the return of the so-called hard-rubber battery container in place of the composition type used when there was a scarcity of rubber. Even with the improvements that have occurred in the composition container, the rubber type is still superior in its ability to withstand mechanical and thermal shocks. Every battery company has made efforts to beautify the "black box," and we now see some batteries with plastic, rather than rubber, vent plugs.

Transmission

Any modications in the conventional transmission, as well as overdrive units, are minor and do not incorporate any engineering changes.

NOTE—*The second part of this article will appear in the November issue of* MOTOR TREND. —Editor.



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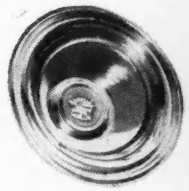

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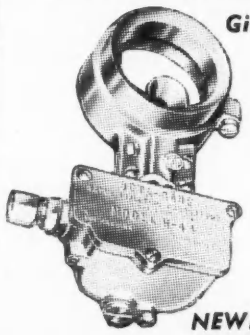

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LETTERS...

FROM OUR READERS...

WHO'S THE GIRL?

. . . I noted on the cover of your first issue of MOTOR TREND that a beautiful brunette was driving the (Kurtis) car. But, I didn't find any mention of her. Are you trying to hold out on us?

Joseph Safransky
Red Oak, Iowa

—Our apologies to Miss Fern Egan, who so graciously agreed to pose in the Kurtis Sports Car for us.—Editor

HOT MG

Enclosed please find $9.75 for a year's subscription to MOTOR TREND, HOT ROD, SPEED DIRECTORY, and the back issues of HRM as checked on the blank.

I would like to know if it is advisable to have the camshaft on my 1949 MG reground . . . My MG has a blower . . . but I would like a little more speed . . .

Also, I would like any information on souping up MG's . . .

Joseph T. Castles
Tombstone, Arizona

—Starting in an early issue of MOTOR TREND, there will be a series of articles on how to increase performance of an MG.—Editor.

HOW ABOUT DUESENBERG?

I have just received my copy of your first issue and I want to congratulate you on a fine beginning. Just keep up the following issues as this, and go heavy on the custom car designing and photos. You will then soon be a must for every sports car enthusiast.

I understand that the Duesenberg car will soon be produced again. That was a real sports car. Any news on it?

A. Kaplan
New York, N.Y.

—Rumors from time to time have it that Duesenberg is re-entering production. From our latest reports, however, it is indicated that the capital is lacking for placing the car into production.—Editor

Letters published in this department are the opinions of the writers and are not to be construed as those of the editors. Address correspondence to Letters From Our Readers, Motor Trend, 548 So. San Vicente Boulevard, Los Angeles 48, California.

"BLISTER BOXES?" "CUSTOM CARS?"

First issue was *swell!* May we have many more like it.

Thanks for pictures like that of the Duesenberg on page 19—one like that is worth 12 of the ugly, clumsy-appearing "Hollywood Styled" custom (?) cars.

Dave Kelsey
Chicago, Illinois

My compliments for a well-done first issue of a periodical sadly lacked in the past by many thousands of "individual" motorists.

. . . I suggest that MOTOR TREND shy away from cluttering up its pages with photos of lead-packed "blister-boxes," which their owners stoutly proclaim to the world as "clean designs." (Should any further clarification be needed, I refer to the channeled, leaded, zero-visibility Fords and Mercs, which are, at best, obese versions of originally-ugly designs.

My hopes are that you continue to print interesting information about the classic fauna of bygone periods—e.g.—Cord, Auburn, Stutz, etc., as well as those European species with inimitable lines and fantastically-advanced engineering ideas (from the American viewpoint).

R. Selan
Seattle, Washington

—Many of these so-called "blister boxes" have innovations that have become standard features on later-built stock models. Look for the first of a series of articles on "classsic" cars in an early issue of MOTOR TREND.—Editor.

SOUTH AMERICAN FAN

Enclosed is my personal check for $3.00. Will you please begin my subscription to MOTOR TREND with the first issue?

George H. Poske
Lima, Peru

MORE BARKER ENGINE STORIES

MOTOR TREND IS THE ANSWER! I think that it is just what all racing enthusiasts like myself have wanted. I really enjoyed Robert Barker's article, "Threat to the Offies," and I think he really has something . . . The things I enjoyed most about MOTOR TREND were the Motoring Showcase, and the photographic layout of the Barker engine.

Donald E. Ore
Harvey, Ill.

Congratulations on a very fine magazine—the first edition was excellent and I'm eagerly awaiting future issues.

I particularly enjoyed your photos of engines and accessories, along with the article . . . on the Barker midget engine.

Edward T. Conway
Fontana, Calif.

WESTERN UNION

JUST RECEIVED YOUR FIRST ISSUE—CONGRATULATIONS ON A FINE JOB!

Frank Brund
J. Ralph Wiederhold
Chicago, Illinois

ENGINEERING VIEWPOINT

As an engineer, my interest in cars is mostly concerned with technical developments. It is hoped that MOTOR TREND will treat liberally with such subjects as Roots blowers, turbo-superchargers, centrifugal blowers, intercoolers, fuel injection, etc. . . . There is a pitifully small amount of literature on some of these subjects in their application to cars . . .

I sincerely wish you every success in your new venture, and eagerly look forward to the enjoyment of MOTOR TREND.

Howard M. Brusseau
Salinas, California

—As liberal a quantity of technical articles as possible will be featured in MOTOR TREND. —Editor

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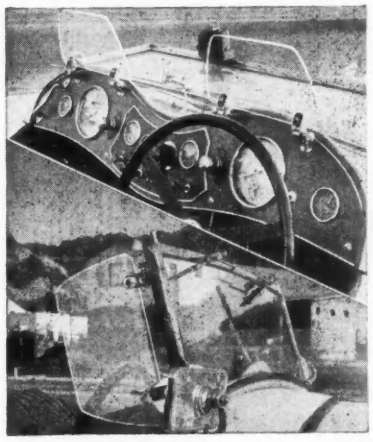

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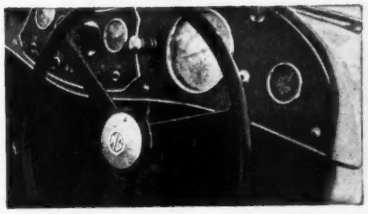

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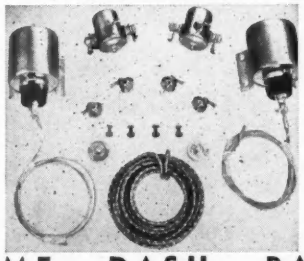

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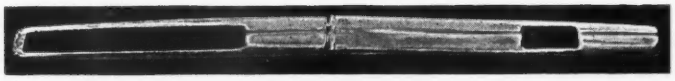

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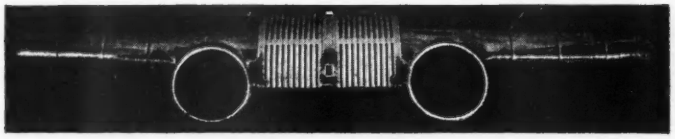

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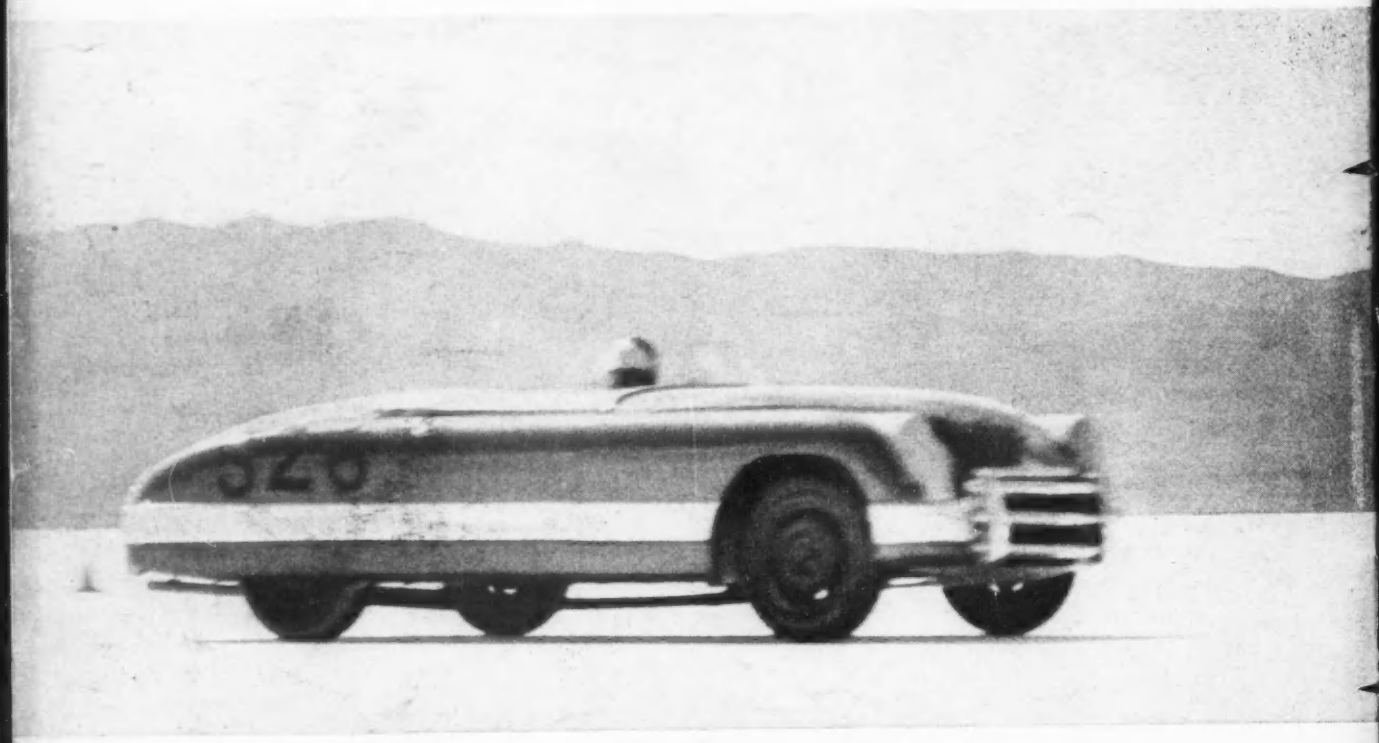

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